UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

Before The Honorable James Donato, Judge

IN RE GOOGLE PLAY STORE	)	
ANTITRUST LITIGATION	)	**NO. 21-md-02981-JD**
_____	)	
	)	
THIS DOCUMENT RELATES TO:	)	
	)	
Epic Games, Inc. vs. Google	)	
LLC, et al., Case No.	)	
3:20-cv-05671-JD	)	
	)	
In Re Google Play Consumer	)	
Antitrust Litigation, Case No.	)	
3:20-cv-05761-JD	)	
	)	
State of Utah, et al. v.	)	
Google LLC, et al., Case No.	)	
3:21-cv-05227-JD	)	
	)	
Match Group, LLC, et al. vs.	)	
Google LLC, et al., Case No.	)	
3:22-cv-02746-JD	)	
_____	)	

San Francisco, California
Tuesday, August 1, 2023

TRANSCRIPT OF PROCEEDINGS

(APPEARANCES CONTINUED ON FOLLOWING PAGE)

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Official United States Court Stenographer

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1	**Tuesday - August 1, 2023** **10:07 a.m.**

2   **P R O C E E D I N G S**

3   **---o0o---**

4   (In open court.)

5   **THE CLERK:** Calling 21-MD-2981, in Re: Google Play

6   Store antitrust litigation.

7   May I have Drs. Singer, Leonard and Rysman come.

8   **THE COURT:** Okay. We'll swear in the witnesses and

9   then we'll make our appearances, okay? It's going to be a

10   group swearing in.

11   **THE CLERK:** Can you each please raise your right hand.

12   (Witnesses sworn.)

13   **THE COURT:** Okay. Sit at your respective tables.

14   Who else is at the tables?

15   **MR. POORTENGA:** Tim Poortenga from Bartlit Beck.

16   **THE COURT:** Okay. The plaintiffs, I'm assuming

17   plaintiffs.

18   **MR. POORTENGA:** Plaintiffs.

19   **THE COURT:** Okay.

20   **MR. RAPHAEL:** Justin Raphael, Match Group. I'm with

21   Munger.

22   **THE COURT:** Munger. Okay. Is anybody here from the

23   AG's office?

24   **MR. GLACKIN:** Your Honor, Brendan Glackin. I'm an

25   attorney representing the AG's Office, but the two gentlemen

1   who introduced themselves will be running the presentations

2   this morning --

3   **THE COURT:** No, I understand.

4   **MR. GLACKIN:** -- for all of us.

5   **THE COURT:** Okay. You can sit down and --

6   All right. So that's Dr. Singer, yes?

7   **DR. SINGER:** Yes.

8   **THE COURT:** Where is Dr. Rysman? Oh, come on up. You

9   can sit at the table. I knew we were missing someone.

10   Okay. Is it Rysman or Rysman?

11   **DR. RYSMAN:** Rysman.

12   **THE COURT:** Okay. Mr. Singer, get in front of a

13   microphone. You can put it in front of you.

14   **DR. SINGER:** Okay.

15   **THE COURT:** Take it off the podium so you can sit

16   down.

17   And this is -- who's Dr. Leonard? Dr. Leonard?

18   **DR. LEONARD:** Yes.

19   **THE COURT:** All right. So Dr. Singer has done a hot

20   tub before. Here's what we're going to do. I have asked you

21   to prepare your joint statement, lawyer-free preparation, which

22   you have done, and I have that, and we're going to cover that.

23   I have some questions I'm going to start with first -- all

24   right? -- so it's going to overlap a little bit with your list

25   of THE top five areas of disagreement person expert. So just

1   be fluid, okay?

2   Now, I'm going to remind our economists of three

3   things: One, this is not an academic conference. I do love

4   the subject, but we're not here to solve problems in economics.

5   We're here to help me decide the Daubert motions, all right?

6   What I'm looking for are your views of -- certainly

7   I've read all your reports and I have the briefs from the

8   lawyers, but I'm looking specifically for your views on whether

9   the proposed testimony that the defendants are challenging by

10   the plaintiffs' experts is sufficiently reliable and useful to

11   the jury that it should be heard at trial, or is it so bad that

12   it amounts to junk science, which, as you may know -- you

13   economists may not know that -- famously was defined by Justice

14   Stevens as opinions that are the equivalent of running your

15   hands over the bumps on a person's head to predict whether

16   they'll engage in certain types of behavior. Okay? That is

17   the standard.

18   Now, it can be junk science in a variety of ways. It

19   can be a completely inapt economic model that no reasonable

20   economist could ever apply to the circumstances of this case,

21   or it can be an okay, acceptable model, so badly executed that

22   it is worthless for the jury to take up. Those are your

23   touchstones. That's what I want you to focus on -- okay? --

24   not the academic nuances of economic law. That I don't need.

25   I want you to focus on those two things as we go through our

1   discussion.

2   We also can't spend all day, so I like economists

3   because they tend to be concise. Make it so here. Okay? We

4   have, you know, some time, but we don't have all the time in

5   the world, all right? Stay focused, okay? It's going to be an

6   exchange. I'm going to start off, and you're going to start

7   talking with each other after I get going.

8   And I am going to ask, for example, with respect to

9   Dr. Rysman's opinions I may also ask Dr. Singer to comment even

10   though he was not an author and vice versa. Dr. Rysman may

11   comment on Dr. Singer's as it comes up.

12   I know you all have presentations here, that's fine,

13   you can show me when the time comes, but let me get us started.

14   I typically invite lawyers to ask questions. So far that

15   hasn't happened, but I'll probably make the same invitation

16   today.

17   All right. If you want to start with Dr. Rysman, or I

18   should say Dr. Rysman's model. And Dr. Leonard, I'm going to

19   ask you first. So there has been, as you know -- I'm sure

20   probably better than I do -- considerable effort to find some

21   kind of model in the antitrust industry that fits the tech

22   industry. And we have some powerful models that's were

23   developed in more traditional industries over time, and there's

24   been a little bit of a struggle to try to come up with a model

25   that captures the reality of tech; for example, products that

1   don't cost the consumer anything out of pocket but may generate

2   money through extracting personal information that is sold or

3   providing advertisements and so on.

4   I read with interest Dr. Rysman's variety model I

5   think is what you called it -- is that right? --

6   **DR. RYSMAN:** Yes.

7   **THE COURT:** Okay.

8   -- and its emphasis on comparing the impact of

9   consumer welfare in terms of lost innovation, lost choice, loss

10   of better products. And I thought that was a not unreasonable

11   way of approaching antitrust injury with an automatic platform

12   like Google Play Store.

13   So you seem to have a different opinion of it. I'm

14   going to start off by saying just as a concept -- we'll leave

15   the details of the execution aside for just a moment, but just

16   as a concept doesn't -- wouldn't you agree the variety model

17   does fit the test better?

18   **DR. LEONARD:** The problem I have is I can't separate

19   out the implementation from the idea.

20   I mean, the idea of differentiated products and

21   consumers valuing them, sure, that has a long tradition. I've

22   written a bunch of papers on that subject myself. But --

23   **THE COURT:** Can you just get a little closer to the

24   mic? Just pull it closer.

25   **DR. LEONARD:** Sure.

1   But the task that we're talking about here is just

2   much too complex and much too involved to be able to do in a

3   reliable fashion, and so that's really the problem, I think,

4   that exists because, as you said, we have to do it in a

5   reliable fashion; so it can't be speculative. We can't make

6   assumption on assumption; and yet, that's really what the model

7   is.

8   **THE COURT:** Well, why is it wrong -- for example, I

9   take it one of your concerns is that Dr. Rysman assumed a

10   hundred percent pass-through rate, which you thought was not

11   grounded in any empirical data, but -- so I understood it.

12   You need to jump in when I say these things.

13   My understanding is, Dr. Rysman said, well, the way to

14   kind of fix that is to assume from the point of origin that

15   that you can't predict any given act's success in the market,

16   so in that sense they're all starting from an equal playing

17   field. And once you have that kind of proposition, you can

18   kind of reason it out. What's wrong with that?

19   **DR. LEONARD:** Well, I actually have some slides on

20   this. Maybe we can go to slide 11 --

21   **THE COURT:** Okay. What is this?

22   **DR. LEONARD:** -- in my set of slides.

23   Yeah, that looks like it's probably it.

24   Yeah. So the unpredictability assumption is really

25   what you just said, which is that the idea that before -- and

1   there's complete unpredictability. Okay? So before the app is

2   produced, the developer has no idea what its success level is

3   going to be.

4   And Dr. Rysman needs to make that assumption to

5   eliminate or avoid all the complexity that I just talked about

6   because, otherwise, if he can't assume that, then he's got to

7   tell us what each of those 300,000 apps that he's saying would

8   come into the marketplace in the but-for world, what each one

9   of them would have looked like. Okay?

10   So to avoid that he says, well, app success is

11 unpredictable, and so from an ex-ante point of view before the

12 introduction they're all indistinguishable. You can

13 interchange them.

14   I took a moment's thought. If you go to the next

15 slide it really suggests that that's not the case. Think of it

16 this way: Call of Duty -- okay? -- one of the most successful

17 game platforms of all time, I believe, you know, was developed

18 first sometime in the 2000s -- right? -- for, like, the PC

19 platform and for game consoles.

20   And then in 2000 and I want to say, I guess, '13ish it

21 was first introduced as a mobile app, the Call of Duty app.

22   Now, Activision, whose game that is, they're going to

23 have a very good idea about how well that app is going to do.

24 Why? Because it's just an extension of what they've been doing

25 so successfully on their consoles.

1   And that is one of the biggest games, again, you know,

2   on Google -- on Game Play.

3   So this idea that app developers have no idea how

4   successful their app is going to be I just think is wrong.

5   Think, again, about another -- a subscription app.

6   HBO. Okay? HBO. Again, they were on cable TV. You may have

7   been a subscriber at one point in time. They now offer an app

8   on Android that you can get and watch HBO content and HBO

9   movies. They then introduced that app. I think they had a

10   pretty good idea of how well it was going to do.

11   Now, that's not to say that every app is predictable

12   or that any app is completely predictable -- I'm not saying

13   that -- but I think it really undercuts the idea that all apps

14   are completely unpredictable, which is Dr. Rysman's assumption.

15   It just doesn't make sense.

16   We also know that companies invest a lot of time in

17   market research to figure out what their apps should look like.

18   We have venture capitalists who invest in certain developers in

19   order to -- you know, based on how they think the app is going

20   to do. Again, not a hundred percent completely predictable,

21   but some degree of predictability.

22   And as the paper that Dr. Rysman relied on shows, if

23   you assume partial predictability, it changes the results a

24   tremendous amount. And so I think it's really important to

25   look at that closely.

1   **THE COURT:** Let me ask you this -- let me ask you

2   this, and then I'll hear from Dr. Rysman.

3   So, I mean, would an ordinary economist just never,

4   under any circumstance, assume a hundred percent -- assume

5   complete lack of predictability for an app? Is that just

6   something an economist would never do?

7   **DR. LEONARD:** In my opinion, an economist would not do

8   that because, again, the paper that Dr. Rysman relies on, they

9   first start off doing complete predictability and they say

10   because it makes things easy. That's certainly true, but then

11   they run these statistical tests that actually show that

12   success is partially predictable. And then in a second step

13   they go and they implement partial predictability. And, as I

14   said, it has a huge effect on the results.

15   So I think, you know, there are issues with that

16   paper. It's not published yet I don't think, but I think any

17   economist who read that paper and said I'm going to study the

18   app industry would say I've got to take partial predictability

19   into account because it's a result that comes out of that

20   paper. And, of course, it makes common sense when you think

21   about it that a lot of apps are going to have an idea about how

22   well they're going to do.

23   One other thing I think you should keep in mind

24   throughout this whole thing is that, you know, apps are like a

25   lot of things, you know, 99 percent of them don't really do

1   that well and then there's 1 percent that are huge blockbusters

2   that do really well, right? And it's those blockbusters that

3   are going to create the consumer surplus because those are the

4   apps that consumers really like.

5   So the question I think with -- you know, I think

6   about with complete unpredictability, whether that makes sense,

7   is does that make sense with blockbusters because that's what

8   we're really talking about are the important ones. And, again,

9   it just doesn't make sense.

10   If you look at the biggest subscription apps, things

11   like HBO, Disney+, New York Times, CBS, NBC, I don't think we

12   can say those -- their success was completely unpredictable.

13   And on the game side, again, you have the biggest

14   selling games are, you know, things that are extensions of

15   existing games often; not every one, but a lot of them are.

16   And, again, it's just unreasonable to say that the

17   Call of Duty people had no idea how well their app would do,

18   and it's a blockbuster. And because it's completely or not

19   completely unpredictable, I think if you really are interested

20   in consumer welfare, you have to take partial predictability

21   seriously.

22   **THE COURT:** So is it your view, then, that if no

23   rational and reasonable economist would ever assume total

24   unpredictability for an app, a necessary consequence, meaning

25   it naturally follows that the entire variety model, as

1   Dr. Rysman has employed it, has to be thrown out?

2   **DR. LEONARD:** Well, again, as soon as you get rid of

3   that assumption, it, first of all, becomes very, very

4   complicated.

5   And second of all, if the paper, again, that he relied

6   on, sort of half of it but not all of it, the half he didn't

7   rely on shows that, it makes a big difference to take into

8   account partial predictability, which, again, makes perfect

9   sense.

10   If the large apps are at least partially predictable,

11   then the GDPR paper is going to find less value.

12   **THE COURT:** Here. Let me put a finer point on my

13   question.

14   **DR. LEONARD:** Sure.

15   **THE COURT:** Here's what I'm asking: Is Dr. Rysman's

16   model just completely junk because he assumed total

17   unpredictability, or are you just saying the model works; I

18   would have assumed a different level of unpredictability, maybe

19   20 percent versus a hundred percent -- I'm just making that

20   number up -- and so now you're quibbling about basically kind

21   of the inputs as opposed to the model itself?

22   **DR. LEONARD:** No. I think I'm talking about a very

23   fundamental -- the fundamental assumption of the entire

24   analysis. And I'm saying that is just so far from the reality

25   of this marketplace that the model just can't possibly be

1   reliable after making that assumption.

2   **THE COURT:** All right. Dr. Rysman?

3   **DR. RYSMAN:** Thank you, Your Honor. So I should say

4   that my counsel instructed me to always stand when I speak to

5   you.

6   **THE COURT:** No, no, no. You're just sitting in the

7   hot tub. This is a hot tub. You don't want standing in a hot

8   tub.

9   **DR. RYSMAN:** Okay. So I disagree with a lot of the

10   statements that Dr. Leonard made, but I'll pick on the

11   characterization of the paper first.

12   So I rely on this paper Janßen and Waldfogel and

13   several other co-authors that came out from the National --

14   it's a National Bureau of Economic Research working paper that

15   came out last year.

16   So they study the GDPR effect on the apps in the

17   Play Store during our damages period, and their main result is

18   that there is no predictability.

19   So they do have a regression that -- where they reject

20   no predictability and find partial predictability, but that

21   regression is using data that they find less useful.

22   Their main results come in a different regression

23   where they find no predictability.

24   So, in particular, there's many signs in the paper

25   that this is true. When they introduce these variables, they

1   say this one -- the one that leads to the partial

2   predictability is less useful.

3   When they studied partial predictability that

4   Dr. Leonard is describing, that comes in a robustness section.

5   That comes in the section titled "Robustness." That's one of

6   four robustness checks that they do. In the other three

7   they're still taking no predictability as the result.

8   The main result is essentially called "Results."

9   That's where the main results appear. That has only no

10   predictability. Partial predictability only shows up in the

11   robustness section. It's kind of a side issue that they

12   explore.

13   And, you know, if you're not sure what the main

14   results of a paper are, you can focus on the introduction and

15   the conclusion. Both the introduction and the conclusion

16   report the results of the paper and only report results from

17   the no predictability results. They don't mention the partial

18   predictability results at all.

19   So this Janßen paper is an example of an economist

20   relying on a no predictability result. That's their main

21   result. And it might be that Dr. Leonard is misrepresenting

22   what that paper finds.

23   **THE COURT:** Well, I mean, you heard what Dr. Leonard

24   said. He's suggesting that no rational economist would ever

25   assume total unpredictability for an app, gave the examples of,

1   you know, the obvious blockbuster apps. What do you think

2   about that?

3   **DR. RYSMAN:** Sure. Well, this paper provides a

4   counterexample because all of their main results come from a no

5   predictability result.

6   And then I think as we try to understand what their

7   result means, they're not saying that, you know, an app from a

8   major developer and a 5-year-old, we could put them on the

9   market and we couldn't, you know, guess which one was going to

10   do better. Naturally, there's some selection mechanism that

11   leads some apps to get funded, some not; some developed and

12   some not. But conditional on being introduced on to the

13   market, it's very hard to predict whether they succeed or not.

14   I'm sure there are counterexamples of a few big

15   developers or something like that where maybe predictability is

16   right, but the -- you know, the Janßen and Waldfogel paper is a

17   systematic study of all of the apps on the App Store -- and

18   they're using data, not just anecdotes -- and they find this

19   result of no predictability.

20   **THE COURT:** All right. Well, if that's fine in the

21   paper, why doesn't this work for the Play Store -- in the

22   alleged Play Store market?

23   (Brief interruption.)

24   **DR. RYSMAN:** They're studying the Play Store exactly.

25   They're studying the Play Store. That's exactly the

1   subject of our case during our damage period. They're looking

2   at the GDPR, which they find reduced entry by an enormous

3   amount, 47 percent. You know, it's -- they're seeing a large

4   decrease in the entry of new apps and then they're finding that

5   app success is the same. They have some measures of app

6   success, and they find that the measures of app success are the

7   same before and after this entry change, so that suggests that

8   the apps after this reduction in entry are no more useful than

9   the ones that came before, and they interpret that as evidence

10   towards no predictability.

11   **THE COURT:** So how essential, in your view, is total

12   unpredictability to the variety model? In other words, if

13   you're right about -- if you're wrong about that is the whole

14   model sunk?

15   **DR. RYSMAN:** I don't agree with that. The model has

16   many features to it. It's calibrated to use a dataset, I

17   estimate the parameters with regressions based on Google's

18   transaction data.

19   There's several elements that go into the model. Of

20   course, the model, itself, is relying on a really foundational

21   model of monopolistic competition that has been used in many,

22   many different settings.

23   And, of course, as Dr. Leonard is pointing out, Janßen

24   and Waldfogel themselves studied a case of partial

25   predictability. I could do it too. I didn't do it because

1   their main result is no predictability. It's not something

2   that couldn't be done.

3   **THE COURT:** So was the data that you have available?

4   Was it possible to try to calculate predictability for an app?

5   **DR. RYSMAN:** I was not able to do so because they used

6   data on downloads and also ratings, so I didn't have access to

7   these data.

8   **THE COURT:** All right. So you -- just at a high level

9   it's your view that you did not have enough data to actually

10 calculate whether -- the degree of predictability above zero?

11   **DR. RYSMAN:** I didn't have access to such data.

12   **THE COURT:** Okay. So nobody could have done it, in

13 other words? Nobody had that data?

14   **DR. RYSMAN:** Nobody --

15   **THE COURT:** It's not unique to you? It's not a choice

16 you made. No economist --

17   **DR. RYSMAN:** No.

18   **THE COURT:** -- would have had the data to do that; is

19 that your view?

20   **DR. RYSMAN:** I mean, maybe Google could have done it,

21 but I don't know, but . . .

22   **THE COURT:** Okay.

23   **DR. LEONARD:** Your Honor, if I may --

24   **THE COURT:** But there's no empirical basis then --

25 well, let's talk about the hundred percent pass-through rate,

1   which I think is connected.

2   So you assumed a hundred percent pass-through.

3   Another plaintiffs' expert, Dr. Singer, had a lower figure --

4   which I'm a little concerned about, but we'll get to that in a

5   minute -- but with a hundred percent pass-through. Was that

6   also just a pure assumption on your part?

7   **DR. RYSMAN:** So just to be clear, I don't assume a

8   hundred percent pass-through.

9   My model I can impose any pass-through rate that we

10   would like, and so I experiment with different pass-through

11   rates and I calculate damages at different levels of

12   pass-through and then the damages number I propose is just the

13   minimum across the whole range of pass-through rates.

14   So I consider pass-through rates from zero percent to

15   a hundred percent, so that's outside of the bounds of any of

16   the pass-through rates that anyone is proposing in this case,

17   and the damages number I actually propose comes from the zero

18   percent pass-through rate, because I find that that minimizes

19   the damages. So it's the most conservative estimate.

20   So just to be clear, I'm not saying that zero percent

21   pass-through rate is the right number or the resulting level of

22   entry is the right number. It's just the result that leads to

23   the most conservative damages number that I can propose.

24   **THE COURT:** And that hundred percent pass-through rate

25   leads to those conservative damages numbers?

1   **DR. RYSMAN:** No. I actually find a zero percent

2   pass-through rate leads to the most conservative number.

3   **THE COURT:** Okay. So on the same issue of -- this is

4   one I want to hear about from all three of the economists.

5   Dr. Leonard said that you chose a demand curve shape that

6   literally dictated, within your model, a hundred percent

7   pass-through rate.

8   In other words, put more simply, you know, you rigged

9   the deck so that when you dealt the cards they came out at a

10   hundred. Why is that wrong, in your view?

11   **DR. RYSMAN:** If I was trying to use my model to solve

12   for the pass-through rate, it would have generated a hundred

13   percent pass-through rate, but I don't use the model in that

14   way. Instead, I impose the pass-through rate exogenously

15   across a wide range and -- yeah.

16   As I said, in the end, the damages number that I

17   proposed emerges from the zero percent pass-through rate, so I

18   think it was just a misunderstanding of what I was doing.

19   If I had solved the model as predicted, it would have

20   generated a -- if I had solved the model for the pass-through

21   rate, it would have generated a pass-through rate, but if I was

22   trying to use it to solve the pass-through rate, I would have

23   added more elements to the model to allow it to be more

24   flexible in that dimension, but that just wasn't my goal.

25   Instead, I just imposed a pass-through rate --

1   **THE COURT:** I'm reading from paragraph 123 of

2   Dr. Leonard's report. So you think that it's wrong when he

3   says that --

4   **DR. RYSMAN:** Yes.

5   **THE COURT:** -- his understanding of what you did --

6   **DR. RYSMAN:** Yes.

7   **THE COURT:** -- and that your damages number ultimately

8   is based on a zero precent pass-through rate?

9   **DR. RYSMAN:** Think of it as agnostic to the

10   pass-through rate.

11   **THE COURT:** Agnostic? Okay.

12   **DR. RYSMAN:** I considered a wide range of pass-through

13   rates and picked the damages number that's most conservative

14   across that range.

15   **THE COURT:** Well, Dr. Leonard, I mean, you make this

16   demand curve assumption point several times --

17   **DR. LEONARD:** Right.

18   **THE COURT:** -- with respect to Dr. Rysman and to

19   Dr. Singer.

20   **DR. LEONARD:** Yes.

21   **THE COURT:** And Dr. Rysman is saying you're two ships

22   passing in the night.

23   **DR. LEONARD:** Well, let me actually start with

24   something he said, which is if he was going to use the model to

25   do pass-through, he would have added a bunch of features to it

1   and everything else. And that's exactly my point about what

2   Dr. Singer did not do. He took a very simplistic model,

3   basically like the one that Dr. Rysman is talking about, and he

4   did it without making those adjustments, without making the

5   test to see whether the model was valid, and that's the problem

6   there.

7   Now, with regard to Dr. Rysman, I mean, he had -- he

8   has an estimate of overcharges that assumes a hundred percent

9   pass-through.

10   **THE COURT:** Now, you just heard Dr. Rysman say he's

11   agnostic on the pass-through rate for his damages calculation.

12   **DR. LEONARD:** All I can say is what was in his report.

13   He had a zero -- as he said, a zero percent pass-through, which

14   is a pure variety damages model.

15   He also has a hundred percent pass-through. And,

16   again, that flows right out of his modeling assumption, as he

17   acknowledged just now. So, I mean, I don't know.

18   He made that assumption. He made the model

19   assumption. It implies a hundred percent pass-through.

20   He did a version of the calculation based on a hundred

21   percent pass-through. I think my statement was entirely

22   reasonable under those circumstances. If he wants to walk away

23   from it now, that's fine with me.

24   **THE COURT:** All right. Well, let's just -- last

25   comment, and then I'm going to ask Dr. Singer, but --

1   **DR. RYSMAN:** Just as I said, I considered a range of

2   pass-through rates. As Dr. Leonard agrees I considered a zero

3   percent pass-through rate, I considered a hundred percent

4   pass-through rate. You see damages go up in the pass-through

5   rate because the bigger the pass-through rate that's what I

6   find in the model. There's more direct price effect, less

7   variety effects.

8   Maybe not surprisingly direct price effects are more

9   harmful to consumers than the variety effect. So, in the end,

10   the damages number that I propose is from the zero percent

11   pass-through rate where direct price effects are minimized and

12   the variety effect for what drives the number.

13   (Reporter seeks clarification.)

14   Okay. I'll just a say my part again and I'm sorry to

15   take your time with this. I consider a range of pass-through

16   rates. I consider a zero percent pass-through rate, I consider

17   a hundred percent pass-through rate. I find that damages

18   increase as the pass-through rate goes up.

19   Maybe not surprisingly direct price effects are more

20   harmful to consumers than variety effects, and so the most

21   conservative damages number that I can propose is with a zero

22   percent pass-through rate, and that's the number that I use.

23   **THE COURT:** Dr. Singer, you wanted to add something?

24   **DR. SINGER:** Yes. Yes. As Dr. Leonard says, only I

25   think it's unfortunately untrue, he said I didn't test if my --

1   if the logit model would satisfy the data. And I just have to

2   say that the logit model makes a very specific prediction about

3   the relationship between an app's share within its category and

4   its price.

5   In particular, the logit model posits that as your

6   price goes up, all things equal, you will lose share in your

7   category. That is the fundamental property of the logit model.

8   That is the logit equation.

9   I tested that equation on the data, and I found that

10   for every category, I got the right sign. I got the correct

11   and expected sign on that price variable, right? As an app's

12   price went up, all things equal, its share in the category

13   fell. Across all categories I got a statistically significant

14   effect. I got a very high R squared.

15   And I didn't stop there. I said maybe there's others.

16   Dr. Leonard, in his writings, prefers the linear model. I like

17   it, too. So we went out and tested the linear model.

18   The problem with the linear model is that we didn't

19   get the expected prediction of the linear model, that is a

20   negative relationship between price and quantity for all of the

21   categories -- right? -- and we got a very -- we got a much

22   lower R squared.

23   So I want to keep this friendly and nice, but I also

24   want to keep him honest, and I'm not going to let someone say

25   that I didn't test the model. I tested the model explicitly,

1   and the model fit the data.

2   The model is one of the most popular and common

3   approaches to modeling demand in the antitrust context.

4   I've got articles and merger reviews and cartels in

5   the vitamin industry in which the logit model has been used.

6   And so I know you want to talk about Dr. Rysman thing,

7   so I'll just stop there.

8   **THE COURT:** Well, we covered some of this with

9   Dr. Burtis at class certification and --

10   **DR. SINGER:** He continues to make the same mistakes as

11   Dr. Burtis made. We'll go through those.

12   **THE COURT:** Well, Dr. Burtis did say that the model,

13   itself, was usable in this context, she just disagreed with

14   some of your execution. To me that means you've got to fight

15   it out in front of a jury.

16   **DR. SINGER:** Of course.

17   **THE COURT:** So you get through. And Google is going

18   to be held to that. They're not going to swap out a new expert

19   and suddenly come out here backtracking on that statement by

20   Dr. Burtis. So that is kind of the foundation.

21   But let me ask -- well, why don't you respond to that,

22   but I do want to ask you about categories --

23   **DR. SINGER:** Absolutely.

24   **THE COURT:** -- in a moment, but go ahead.

25   **DR. LEONARD:** Your Honor, I know you probably don't

1   want to hear any more about the logit model, but I have --

2   **THE COURT:** Oh, no, no, I do, but there's already a

3   chip on the table from Dr. Burtis --

4   **DR. LEONARD:** Okay.

5   **THE COURT:** -- and you can't take that chip back.

6   That's all I'm saying.

7   **DR. LEONARD:** Yeah. No, I understand.

8   I think there are a couple of things to realize.

9   First of all -- and this is really important -- is that the

10   supposed test of the logit model, which is not a test. I mean,

11   you can't find a single economist who would run a test of the

12   logit model in the way that Dr. Singer is claiming. The right

13   way to do it is to test it against alternatives.

14   He said well I ran it against the linear model. Well,

15   he didn't do that in his initial report. It was only after I

16   pointed it out that his test didn't work that he tried that in

17   the subsequent report.

18   But anyway, that's not -- the big problem with the

19   logit model is the so-called IIA assumption. You may have

20   heard about. And there are -- since probably 1977 or so there

21   have been well-known tests that test for the IIA assumption.

22   And it's also very well known you shouldn't just

23   assume logit because it has these very restrictive assumptions

24   on substitution patterns -- you may have heard. You know,

25   basically a proportional substitution.

1   You don't make that assumption unless you've first

2   tested it and found that it is a valid assumption. Nothing

3   Dr. Singer did tests that assumption, okay?

4   And then there's a second problem, which is, is we're

5   interested here in knowing what the pass-through is. So why

6   don't we actually go to the data and estimate the pass-through

7   using real world data on what happened when Google changed its

8   service fees?

9   I did that in my report, and I found that the actual

10   pass-through behavior of developers is completely inconsistent

11   with the predictions of Dr. Singer's logit model. And because

12   of that -- I mean, that's how we test models --

13   **THE COURT:** Let me just jump in, okay?

14   That's a fine point for cross-examination, but I'm not

15   hearing -- and certainly I've heard Dr. Burtis's testimony at

16   the last hot tub. I'm not hearing anything to say that the

17   application of the use of the logit model is just junk science

18   that nobody in the jury should ever hear.

19   I'm hearing you say you disagree with the way it was

20   implemented, you disagree with some of the inputs, you disagree

21   with the, you know, empirical data versus whatever you think

22   Dr. Singer did, but I'm not hearing you say that, you know, no

23   self-respecting economist would even dream of using the logit

24   model in this circumstance.

25   Certainly Dr. Burtis said it was a reasonable

1   application. She disagreed with many points that you do with

2   how it was done but didn't rule out its applicability.

3   **DR. LEONARD:** Well, but I don't think an economist

4   would do it the way he's done it here. That's what I'm saying.

5   He's assuming the model, he's running a test that's

6   not really a test, and then he's using the model to calculate a

7   pass-through rate.

8   I mean, one of the papers he cites says at the end of

9   it, "These calculations" -- meaning sort of pass-through

10 calculations -- "are largely based on market shares and

11 assumptions about competition in the market" -- the particular

12 market they're looking at. "A more complete analysis would aim

13 to estimate directly the extent of pass on based on historical

14 information of vitamin prices and premix prices." The industry

15 in question was vitamin premix.

16   And so in that case market shares wouldn't be

17 necessary for doing the calculations.

18   So what this paper is saying -- and this is the one he

19 cites says, oh, people use logit. They just use logit as a

20 illustration of their approach. And what they're was saying is

21 that by really doing this; for instance, in a court case about

22 price fixing and pass-through of overcharges, I would actually

23 do a more complete analysis.

24   And that's what I'm saying here is that no economist

25 would implement a logit-based formula for pass-through without,

1   A, testing the logit model in the way that economists have

2   developed over the years and that's very commonly done; and B,

3   testing the predictions against actual pass-through behavior in

4   the marketplace, which, again, he never did.

5   His regression he talks about --

6   **THE COURT:** You're referring --

7   **DR. LEONARD:** Oh, sorry.

8   **THE COURT:** -- to the 15 percent reduction in 2022,

9   testing it against real world data?

10   **DR. LEONARD:** There were two. There was that for

11   subscriptions. And then in July 2021, there was a reduction

12   for certain developer or for revenues up to a certain count for

13   developers. So you can look at both of those, which is what I

14   did. And I found, you know, essentially very low levels or

15   zero pass-through, so --

16   **DR. SINGER:** Your Honor --

17   **THE COURT:** -- he's got to come to grips with that

18   fact that his model predicts massive pass-through. You don't

19   see that in the marketplace following these events, and that's

20   a rejection of this model.

21   **DR. SINGER:** Your Honor, can I just respond?

22   **THE COURT:** Yes.

23   **DR. SINGER:** There's a lot there again --

24   **THE COURT:** Yeah, please.

25   **DR. SINGER:** -- several misrepresentations of the

1   literature again. It's unfortunate.

2   Starting with the IIA, I cite to several articles that

3   show that the logit model can be used without a direct test of

4   the IIA. In fact, the test that is used for IIA, called the

5   Hausman-McFadden test, often can't be done.

6   And importantly, Dr. Leonard, himself, who thinks it's

7   so fundamental, did not even bother to try to test it. And the

8   reason why neither economist could test it here is because the

9   data just doesn't really set up for that.

10   But importantly, there are articles that I cite that

11   show in a well-specified model, which mine is -- very tight

12   fit. All the predictions are right between that relationship

13   between price and an app's share of market -- that the IIA can

14   be implicitly satisfied. There's no requirement. This is a

15   quote from Trane who has the textbook. Trane says that "In a

16   well-specified model, the IIA assumption can be presumed to be

17   satisfied." Okay? I just want to make that point.

18   The second thing is, he talks about exploiting these

19   natural experiments -- okay? -- these are botched experiments,

20   botched experiments.

21   You said the 15 percent, Your Honor. The only one

22   that he tested empirically was a highly attenuated experiment

23   in which Google gave a 15 percent cut on your first 1 million

24   in sales. Imagine an app developer like Mine Craft. He even

25   put in a chart -- I couldn't believe, in his report -- Mine

1   Craft blows through the million in a nanosecond, right?

2   There's no way that that 15 percent cut for -- that

3   lasted a nanosecond is going to enter into the pricing

4   calculous of Mine Craft or for Microsoft.

5   **THE COURT:** Let me jump in.

6   So the 15 percent, so we're clear, first knowing you

7   get 15, then it goes 30 --

8   **DR. SINGER:** You're out. Then you're out.

9   **THE COURT:** -- one million plus one dollar and --

10   **DR. SINGER:** Right.

11   **DR. LEONARD:** That's a misrepresentation, Your Honor.

12   **DR. SINGER:** And so -- and so one of his tables -- he

13   does like five top-100 tables. One of them is completely

14   contaminated by including the bigs. He does the top 100 by

15   revenues. And the bigs blew through the 15 percent. I mean,

16   this really is junk science.

17   With respect to even the mom and pops, the little

18   guys, no one enters into this business thinking that they're

19   going to stay at $44,000 a month. Those are the ones who

20   stayed down at the 15 percent. No ones business plan says I'm

21   going to stay the $44,000 a month, but those are the only ones

22   who are eligible for this 15 percent discount, and those are

23   the ones that he exploited in his differences regressions.

24   And I'm telling you that when you go into business,

25   you don't know if your sales are going to be 40,000 that year

1   or 400,000 or 4 million, but you're certainly not expecting and

2   hoping for 44. So I submit to you, Your Honor, that no one is

3   thinking that this 15 percent discount on my first million of

4   sales is going to be my permanent rate.

5   I just want to make one last point. I think he says

6   he has to come to grips. Can I -- is it okay if I put a slide

7   for you?

8   **THE COURT:** Sure.

9   **DR. SINGER:** It's my slide 3.

10   I think Dr. Leonard has to come to grips with the

11   position that he's taken in academic writings and how it defies

12   the standards that he's applying here, right?

13   This is an article that he co-authored with Jerry

14   Hausman. And in this article he basically says that he rejects

15   the FTC's staff economist's direct estimate of 21 percent

16   pass-through because he thought that would imply an atypical

17   demand curve. So there's no such thing. This violates the

18   shape of demand curve. It's not how we draw it up on the

19   textbooks or on the blackboard.

20   He says, in fact, that anything below 50 percent,

21   which is the linear -- right? -- should be rejected, in which

22   case we should embrace the indirect approach.

23   There's two ways to do pass-through, Your Honor.

24   There's the direct approach where you go out and you try to do

25   a regression of changes in wholesale prices on changes in

1   retail, which I've done many times in other cases. But if you

2   can't do it here because you either get unrealistic estimates

3   like his negative 3 -- impossible. Impossible. You can't have

4   a pass-through. That's his best estimate, negative 3, right?

5   If you can't do it -- if you get a unreliable estimate

6   or you can't do it because we just have a horrible experiment a

7   highly attenuated program to exploit, you must embrace the

8   indirect approach. That is, you've got to go estimate the

9   demand curve and then make an inference about what the

10   pass-through looks like based on that demand curve. And that's

11   the position he took in this article.

12   And there's good news here, Your Honor. There's an

13   agreement among the experts that if you can't reliably estimate

14   the pass-through directly, you must embrace the indirect

15   approach. So there's agreement.

16   The only problem is that in a litigation setting, he

17   changes his standards. Now he's violating the standard that he

18   put forth in that article, and he's saying this is a

19   litigation -- this is litigation. In litigation I'm going to

20   drop my standard and I'm going to embrace a pass-through rate

21   of minus 3 percent, even though there's no demand curve that

22   could ever be associated with it. And that would imply --

23   think about what that would imply, Your Honor -- that when your

24   costs go up, your prices go down and when your costs go up,

25   your prices go down? I mean, it's just unfathomable.

1   I think Dr. Leonard needs to come to grips with what

2   he has written and explain what it is about the demand curve.

3   That is the question I have for Dr. Leonard. What is it about

4   the demand curve for apps -- right? -- that is so special that

5   it would -- it would tolerate and be consistent with a minus 3

6   percent pass-through?

7   Why are apps -- why is the demand for apps so

8   different than the demand for any other product in life?

9   That's my question for him. What is it about demand curve?

10   **THE COURT:** Let's pause on that and hear Dr. Leonard's

11   response.

12   **DR. LEONARD:** Absolutely.

13   Well, the fundamental problem here is that Dr. Singer

14   made a mistake in his pass-through formula. If he had gotten

15   that right -- this is just math -- all right? -- sort of

16   graduate student level math that he had gotten wrong. If he

17   had gotten that right, then he would understand very well why

18   you wouldn't expect to see pass-through.

19   The issue here is one of ad valorem fee versus per

20   unit fee. He calculated his formula based on the assumption

21   that it's a per unit fee. It's not. It's a percentage of

22   revenue. And that makes all the difference in the world.

23   **THE COURT:** Well, yes. So tell me why that's so

24   critical, in your view.

25   **DR. LEONARD:** Okay. Yeah. I'm happy to do that.

1   It's going to be helpful if I go to -- let's see. Let

2   me find the right slide here.

3   So let's go to slide No. 47.

4   Okay. So on the top of this panel is Dr. Singer's

5   formula he used to calculate pass-through. And you can see

6   it's very simple. It's just one minus the developer's category

7   share.

8   **THE COURT:** That's the logit model?

9   **DR. LEONARD:** That's right. Exactly. The results of

10 the logit model.

11   What I'm going to talk about right now, though, is

12 separate and apart from the logit problem. So I'm going to

13 assume, okay, let's just put aside that. Let's assume logit.

14 What happens, though, if the service fee is a ad valorem tax,

15 which of course it actually is? Then you get the pass-through

16 formula that's in the second panel here. And what you can see

17 is that there are two additional terms. And Dr. Singer just

18 left these out.

19   The important one I want to talk about is one that's

20 the marginal cost divided by price. So what this means is, if

21 marginal cost is very small, the pass-through rate of a

22 ad valorem service fee is going to be very small, okay?

23   And so, for instance, if you -- I'll get to an example

24 of that in a minute, but let me just -- if you go to slide 48

25 and slide 49, we can just breeze through these. But, I mean,

1   this has been known in the literature forever that an

2   ad valorem tax in the case of tax is very different than a per

3   unit tax and that the pass-through rate of an ad valorem tax is

4   less than the pass-through rate of a per unit tax.

5   Okay. So then let's see what difference it makes if

6   you go to slide 50.

7   **THE COURT:** It would be nice if we could just pause

8   for a moment.

9   **DR. LEONARD:** Sure.

10   **THE COURT:** So the reason I asked you to talk about

11   per unit versus ad valorem is that I want to hear your view.

12   Is that something that a reasonable ordinary economist would

13   never do?

14   **DR. LEONARD:** Yeah. It's a mistake.

15   **THE COURT:** But it's not just a matter of choice or

16   nuance --

17   **DR. LEONARD:** It's a mistake.

18   **THE COURT:** -- or a little bit longer formula? It's,

19   in your view, a flatout --

20   **DR. LEONARD:** Correct.

21   **THE COURT:** -- no economist worth his or her salt

22   would ever do it?

23   **DR. LEONARD:** That's right.

24   **DR. SINGER:** Your Honor, can I --

25   **DR. LEONARD:** No. Let me finish.

1   **THE COURT:** Yeah, go ahead.

2   **DR. LEONARD:** Okay. So let me see what kind of

3   difference it makes. If we look at slide 50.

4   **THE COURT:** 50?

5   **DR. LEONARD:** Yeah.

6   So Dr. Singer's format -- I'm just -- this is our --

7   you know, an example, but just to show. So if the category

8   share is 8.9 percent, then Dr. Singer is going to come up with

9   a 91.1 percent pass-through. Okay?

10   But with the correct formula and if the margin of

11 cost-to-price ratio is 10 percent and the service fee is 30

12 percent, then the correct pass-through rate is 18.6 percent.

13   So he's getting the pass-through rate completely wrong

14 for quite reasonable values of marginal costs in the case of

15 software because, of course, software has relatively low

16 marginal costs and perhaps more fixed costs.

17   And what this means is that you could have actually

18 pretty low pass-through rates when marginal cost is low

19 relative to price. And putting that together with some of the

20 other things I talk about, like focal point pricing, that can

21 lead to what we see in the marketplace, which is a lack of

22 pass-through for many products.

23   Now I think, Your Honor, if I can -- you would indulge

24 me to address Dr. Singer's discussion of what I did there

25 because, you know, it was --

1   **THE COURT:** Well, let's just pause for a moment.

2   **DR. LEONARD:** Okay. Sure.

3   **DR. SINGER:** Can I respond to this ad valorem versus

4   per unit?

5   **THE COURT:** Yes.

6   And since we sort of started with Dr. Leonard's

7   slides --

8   **DR. SINGER:** Yeah, let's stay there.

9   **THE COURT:** -- if you want to work those in, that

10   would be useful.

11   **DR. SINGER:** Yeah. Let's stay there.

12   **THE COURT:** All right.

13   **DR. LEONARD:** That's a great place.

14   Dr. Leonard keeps calling it a math error of mine.

15   I'm using the Millers -- the article for pass-through under

16   logit in the Miller publication, which is the seminal piece on

17   pass-through for differentiated products competition.

18   And so to say that I made a math error is just a

19   complete misstatement of what I've done.

20   But the debate -- there is no math error. The debate

21   is whether or not Miller's formula -- the logit can be used in

22   the case of an ad valorem tax, right?

23   I was stunned that Google rushed in, in the 11th hour

24   two new articles to back up Dr. Leonard's position. He has no

25   support, Your Honor. That formula that he's derived in the

1   back is for the monopoly case; nothing to do with our case

2   here. That is no app category that's monopolized. They are

3   better characterized as differentiated products competition,

4   right?

5   He solves for the monopoly case and he finds this

6   other term in there, conveniently, that leads you to --

7   requires you to know the other marginal costs. Miller's does

8   not.

9   In Miller's published, peer reviewed paper the

10   marginal cost term drops out, right, in the pass-through. It's

11   in there in the original opposition.

12   **THE COURT:** But why does it drop out?

13   **DR. SINGER:** It drops out for technical reasons, but

14   I'll try to give you some.

15   Oh, he's taking a second derivative --

16   **THE COURT:** Don't delve too deep into --

17   **DR. SINGER:** No, no, no.

18   (Reporter seeks clarification.)

19   **THE COURT:** That was my fault. Go ahead.

20   **DR. SINGER:** The reason why it drops out is that you

21   can think -- I'm going to give you the intuition. I'm first

22   going to give you the math, and then I'll give you the

23   intuition.

24   The math is that you're saying a second derivative.

25   The first derivative is to solve for the optimal giving a

1   profit function, right?

2   I'm going too fast. I'm sorry. I'm sorry. I got

3   excited.

4   The first is to take the derivative of the profit

5   function and solve for the optimal price. The second step is

6   to take the derivative of that derivative, which is a second

7   derivative of the optimal price with respect to a change or

8   what Miller says, a perturbation in the cost.

9   And just when the math -- when you do the math with

10 logit demand, marginal cost drops out. When you do the math

11 with the linear demand, marginal cost drops out.

12   He, for the first time, untethered, untethered to the

13 economics literature, solves for the monopoly pass-through and

14 says that's the one I should have used and I made a math error.

15   Then Google, in the 11th hour --

16   **THE COURT:** Let me ask -- let me just jump in.

17   **DR. SINGER:** Your Honor, this ends the debate, what

18 I'm about to tell you.

19   **THE COURT:** Okay. Well, let me ask you --

20   **DR. SINGER:** Okay.

21   **THE COURT:** Finish that, please --

22   **DR. SINGER:** All right.

23   **THE COURT:** -- and I'll ask you again.

24   **DR. SINGER:** All right. Can I do it? This is huge.

25   **THE COURT:** Yeah, yeah.

1   **DR. SINGER:** Google enters into the record two

2   articles that they have never cited before, never cited

3   Leonard's studies for this hot tub, okay?

4   Let's grant them. So we read them this weekend. That

5   was my weekend reading.

6   I want you to go to one by --

7   **THE COURT:** Do you want to know what my weekend

8   reading was?

9   **DR. SINGER:** I'm sorry.

10   **THE COURT:** It was you, okay?

11   **DR. SINGER:** I'm sorry.

12   **THE COURT:** Yeah.

13   **DR. SINGER:** Well, then that --

14   **THE COURT:** Go ahead.

15   **DR. SINGER:** -- was probably more enjoyable than this.

16 But this was 1953. Although when I got to the sentence I

17 nearly fell out of my chair. 1953 article by Susan Musgrave

18 that Google entered into the record in the 11th hour and it

19 says that "There is no difference between an ad valorem and a

20 per unit tax increase for competitively supplied industries."

21 And I'm adding this: Such as the app industry that I've

22 studied here.

23   In the very article that he gave to me it says there

24 is no difference between ad valorem and per unit tax increase

25 for competitively supplied.

1   This is the fundamental debate, Your Honor.

2   By the way, whoever submitted that thing into the

3   record, I think that that was quite dicey.

4   But let me just suggest this: This is the heart of

5   the debate. If you believe that the app demand is properly

6   characterized as monopoly supplied, have I got an equation for

7   you. That's Dr. Leonard's unpublished, unpeer reviewed, first

8   time in his appendix. You should go with that one.

9   If you instead believe that the app industry is

10   properly characterized as competitive, I've looked at the

11   concentration ratios. That's how -- I had to solve for the

12   concentration, as you know, to get the logit pass-through.

13   It's one minus the share and I take an average across every one

14   and we get very high pass-throughs because these are

15   unconcentrated industries. That's the fundamental debate.

16   Do you believe -- do you believe the app industry is

17   characterized as a monopoly? Have I got something for you.

18   And this is the last thing I'm going to say.

19   Your Honor --

20   **THE COURT:** But before you do that -- hold on.

21   **DR. SINGER:** -- could you imagine if I came in this

22   courtroom --

23   **THE COURT:** Hold on. Hold on.

24   **DR. SINGER:** -- and I had the pass-through rate --

25   Okay. Sorry.

1   **THE COURT:** Your conclusion is based on the Miller

2   article that Miller sets the paradigm for competitive space.

3   **DR. SINGER:** Exactly. For every type of demand.

4   **THE COURT:** And you're saying Dr. Leonard's additional

5   factors are based on an assumption that there's a monopoly for

6   the product?

7   **DR. SINGER:** That's right. He solves for the

8   monopoly.

9   But I just want to make this last point, and then I

10   can turn the baton back over.

11   Can you imagine if I came into your courtroom with my

12   pass-through formula and I said: I've derived a novel

13   pass-through that doesn't appear in the literature but I think

14   it's the appropriate pass-through rate here, in defiance of

15   everything -- oh, he put in another one from 2022 that can't

16   even -- can't even replicate his. The '22 article they put in

17   at the 11th hour doesn't even replicate his logit. They're

18   doing a logit one. They're doing a more complicated thing

19   because it's doing a combination of a per unit and an

20   ad valorem at the same time.

21   But my final point, I promise, Your Honor, is that

22   litigation -- right? -- is not the time for innovation.

23   You wouldn't want me to come into your courtroom and

24   say: I've derived a pass-through model from scratch and I'm

25   trusting you to embrace my pass-through. It's not in the

1   literature. There's not a single citation in support for my

2   pass-through.

3   You wouldn't want me to do that. You'd want me to

4   come in and say I'm going with the standard pass-through as

5   derived by Miller in the seminal article on pass-through.

6   I'll leave it at that.

7   **THE COURT:** All right.

8   Dr. Rysman, what do you think?

9   **DR. RYSMAN:** I'm so sorry. I haven't studied this

10   issue and I haven't read the Miller paper or the --

11   **THE COURT:** Well, you're chair of the econ department

12   at BU, aren't you?

13   **DR. RYSMAN:** I am, yes.

14   **THE COURT:** Well, based on what you've heard so far do

15   you have anything to add?

16   **DR. RYSMAN:** I can't really say.

17   **THE COURT:** All right. Okay.

18   **DR. LEONARD:** Your Honor, can I respond?

19   **THE COURT:** Yes, very briefly and then I want to move

20   on to the issue of the categories.

21   **DR. LEONARD:** Okay. I'll be brief, but, I mean, what

22   I just heard is --

23   **THE COURT:** Well, let me ask you, if I may just focus

24   your comments.

25   **DR. LEONARD:** Sure.

1   **THE COURT:** So Dr. Singer is saying that the Miller

2   article perfectly fits the actual dynamics of the Play Store

3   market and that yours isn't a precise application of the logit

4   model to a situation that doesn't exist here and that is when

5   the developer has a monopoly.

6   **DR. LEONARD:** Yeah. So, I mean, that was sort of an

7   outrage, I would say, just to -- for him to say those things.

8   So let's just start with the 2022 paper that he tried

9   to say somehow doesn't apply. It does apply. It shows exactly

10   what I'm showing here, which is that when marginal cost is low,

11   the pass-through rate for an ad valorem tax can be very low,

12   very small. It approaches zero as the marginal cost approaches

13   zero. So that's what the paper shows --

14   **DR. SINGER:** It doesn't show that.

15   **DR. LEONARD:** -- which is exactly what I've been

16   telling you here, Your Honor.

17   **DR. SINGER:** They can't solve it for the logit.

18   **DR. LEONARD:** That's completely wrong.

19   **DR. SINGER:** They don't solve it for the logit case.

20   **THE COURT:** Hold on.

21   **DR. SINGER:** I'm sorry.

22   **DR. LEONARD:** Okay. Secondly, this idea that the app

23   industry is perfectly competitive, we've talked earlier about

24   how there's substantial fixed costs and relatively low marginal

25   costs. That's the kind of situation that's a -- you know,

1   they're differentiated products -- right? -- so this is not

2   perfect competition. And, in fact, he's applying the logit

3   model, which is a model not of perfect competition but instead

4   of differentiated products. So absolutely these papers that

5   I'm talking about apply, and this idea that it's perfectly

6   competitive is ridiculous.

7   And then the last thing I absolutely loved was saying,

8   oh, well, I've looked at the concentration measures for this

9   market and concentration is really low.

10   He's basing that on, I guess, the app categories and,

11   you know, if you look at any of the app categories, they will

12   have things that are clearly not substitutes for each other.

13   **THE COURT:** Well, if I may jump in. That's a good

14   transition --

15   **DR. LEONARD:** Uh-huh. Okay.

16   **THE COURT:** -- so you make much of the fact that the

17   categories are super broad, in your review.

18   And as I said in my class cert order, for example, a

19   games category will have everything from teaching your kid how

20   to read with some kind of a game to, you know, slaughtering

21   Nazis in a recreation of some type of war game.

22   So why is that a problem, though? I mean, this is how

23   Google packages its categories. This is Google's way of doing

24   business. So what's wrong with Dr. Singer relying on Google's

25   way of doing business?

1   **DR. LEONARD:** Because, I mean, we -- I think we know

2   from antitrust cases that the way companies define groups of

3   products aren't necessarily a market in the antitrust sense.

4   And yet, what the logit model is assuming is that what you're

5   calculating shares on, that the products that are in the

6   denominator, if you will, of that calculation are all

7   substitutes for each other and, what's more, that they're

8   substitutes in proportion to their shares.

9   So if you have a category and you're calculating

10   shares of that and saying, oh, logit should apply; and yet, you

11   have these examples of, you know, some of the categories --

12   let's see.

13   Sorry, Your Honor. Let me just jump ahead.

14   **THE COURT:** Well, while you're looking, so you're

15   saying that the logit model assumes or needs to assume that --

16   **DR. LEONARD:** Yeah. If you go to --

17   **THE COURT:** -- products are all substitutes for each

18   other?

19   **DR. LEONARD:** Yeah. I mean, that is the assumption.

20   So in the logit model if the price of one of the products in

21   the group, it goes up, then consumers are assumed to shift to

22   all the other products in the category in proportion to their

23   shares.

24   So if we look at 55 -- this is an example of Google's

25   education category -- the question to be asking yourself is, is

1   Rosetta Stone a substitute for Epic Kids Book and Reading. In

2   other words, if the price of Rosetta Stone, which is a language

3   learning app, went up by 10 percent would people say, oh, gosh

4   I'm going to switch now to the Epic Kids Book and Reading App?

5   No. I mean, they're not substitutes.

6   Google creates this category to make it somewhat

7   easier for people to search for apps. They can say, well, if

8   I'm interested in kids books app, I'm going to go to education.

9   If I'm interested in language learning, I also know to go look

10   at the education category, but it doesn't mean the things

11   within that category are necessarily substitutes. Some will

12   be, but across the board, no. But yet, that's the assumption

13   of the logit model.

14   **THE COURT:** So what does that mean for the use of the

15   logit model?

16   **DR. LEONARD:** That the IIA assumption is not right.

17   And, again, Dr. Singer said: Oh, you can't test it;

18   oh, I don't have the data.

19   I don't think that's an excuse for making an

20   assumption that's clearly wrong when you looking look at the

21   underlying facts. That's not what an economist does.

22   **DR. SINGER:** Can I respond to this? Can I respond to

23   this, Your Honor?

24   **THE COURT:** Yes, please.

25   **DR. SINGER:** He came close to stating the requirement

1   but, he missed it a little bit.

2   The requirement under proportional substitution is

3   that consumers are more likely to substitute towards the most

4   popular apps in a category. That's what proportional

5   substitution means. He keeps saying all are substitutes. It's

6   that proportional substitution is that what the logit would

7   predict is that you're more likely to go to the more popular

8   app.

9   So can we go to his wonderful exhibit? I want to

10   embrace -- I embrace his exhibits. They --

11   **THE COURT:** Exhibit 55?

12   **DR. SINGER:** -- allow me to enhance my case. Yeah.

13   **THE COURT:** 55.

14   **DR. SINGER:** Let's go to that educational one.

15   **THE COURT:** All right.

16   **DR. SINGER:** So he wants you to think that the logit

17   requires each one of these things to be close substitutes.

18   That's not what it requires, right?

19   I want to give you an example, Your Honor.

20   **THE COURT:** You're saying "right." I don't know.

21   **DR. LEONARD:** No. They have to be --

22   **DR. SINGER:** No, no, no, sorry.

23   **DR. LEONARD:** -- substitutes in proportion to their

24   shares.

25   **DR. SINGER:** Sorry. He wants you to suggest when he

1 puts it together this --

2   **THE COURT:** One second.

3   **DR. SINGER:** Yeah.

4   **THE COURT:** Why is that wrong?

5   **DR. SINGER:** Oh, because that's not what the

6 requirement is. The requirement is proportional substitution,

7 not that all are each close substitutes with each other in a

8 category. It's just proportional substitution.

9   Now, let me give you and example of what proportional

10 substitution would mean in this context, right?

11   Let's use his Rosetta Stone, which you may know is a

12 language app, Your Honor. So now imagine when the price of

13 Rosetta Stone goes up -- right? -- consumers are more likely to

14 switch to the apps in that category with the highest shares.

15 Guess which app has the highest share in the category? One of

16 the highest shares is Duo Lingo -- right? -- Duo Lingo is a

17 language app -- right? -- than it will to apps with a minuscule

18 share. So he picked one of his things with minuscule share.

19   So that's all the logit is asking you to believe in is

20 that when people leave an app that the likelihood that they

21 wind up at some other app is in proportion to its shares.

22 That's it.

23   So they love to put together these, you know,

24 cockamamie combinations and say: Oh, look, Singer must have

25 you believe that these two pair-wise combinations are perfect

1   substitutes.

2   That's not what the logit model demands -- right? --

3   it's proportional substitution.

4   And we could go through and do an example of his

5   productivity slide.

6   **THE COURT:** Does the Miller paper say that?

7   **DR. SINGER:** Excuse me?

8   **THE COURT:** Does the Miller -- what is the source of

9   the proportionate substitution or demand proposition, is that

10   Miller?

11   **DR. SINGER:** Oh, I think it will be in Miller, but it

12   will be on any -- in any -- I don't think that's disputed.

13   It's proportional substitution. That's what the -- that's what

14   the IIA property is about.

15   **THE COURT:** Do you dispute that, Dr. Leonard?

16   **DR. LEONARD:** Proportional, that's right.

17   So taking his example, what if you have an app with a

18   large share -- okay? --in the education category that's --

19   like, let's say the plant identifier app has a large share. He

20   says he's using a model that says that when the Rosetta Stone

21   raises its price, the people who are buying it, who are

22   interested in the language app, are going to shift in large

23   numbers to the plant identifier app.

24   **DR. SINGER:** No.

25   **DR. LEONARD:** No, that's what it says.

1   **DR. SINGER:** That's not what it says.

2   **DR. LEONARD:** He's saying it has a large share; that's

3   my assumption that a lot of things are going to do go to that.

4   **DR. SINGER:** It has --

5   **DR. LEONARD:** That's what he just said.

6   **DR. SINGER:** It has a smaller share than Duo lingo,

7   which is what --

8   **DR. LEONARD:** No, but what if they don't?

9   **DR. SINGER:** -- which is what was the problem.

10   **DR. LEONARD:** No. I looked it up.

11   **THE COURT:** Hold on everybody.

12   **DR. LEONARD:** Well, this is the problem then. There's

13   plenty of examples where you have a large share of -- two

14   things have large shares, let's say, within the category but

15   they clearly aren't substitutes. He's assuming there's

16   proportional large amounts of substitution. That just can't be

17   right.

18   **THE COURT:** All right. Closing word and then I'm

19   going to move on. Dr. Singer.

20   **DR. SINGER:** I think that certainly at the household

21   level you would see households spreading their budget across

22   apps within the same category, education and productivity.

23   I think the proportional substitution requirement is

24   not that stringent of a requirement. It's easily satisfied

25   when we look at the categories that Google has smartly come up

1   with and that app developers have smartly chosen into, to try

2   to educate their customers as to what they're selling.

3   **THE COURT:** Okay. Dr. Rysman, I want to have you turn

4   to your slides. I'm interested in hearing more about your

5   model. Can we put this up on the screens, so the gallery ones

6   and the ones in the jury? Yeah.

7   Okay. Okay. Great. Okay. Go ahead.

8   **DR. RYSMAN:** Shall I stand for this or . . .

9   **THE COURT:** Yeah, just -- I want to -- the model is of

10 interest, and I want to hear more about it. If you want to

11 stand up, that's fine. Just take the microphone from

12 Dr. Singer --

13   **DR. SINGER:** I'll give you mine.

14   **THE COURT:** -- and put it up on the podium.

15   **DR. RYSMAN:** Okay. Thank you, Your Honor.

16   Okay. So my perspective on this case is that to the

17 extent that Google acted anti-competitively, they both --

18 Google both raised price and also reduced the number of apps on

19 the App Store.

20   So consumers -- as we've been discussing, consumers

21 value the number of apps on the App Store. Apps provide many

22 different features, different functions, different user

23 interfaces. We've heard testimony that consumers value the

24 number of apps and use the number of apps as a way to choose

25 between app stores.

1   Dr. Tucker, who's one of Google's other experts,

2   states that in her report. And there's many industry experts,

3   Google executives that testified similarly. Many people

4   remember that marketing campaign, "There's an app for that."

5   And, you know, what that's saying is people that come to the

6   app store are going to be able to find many different apps that

7   do the exact thing that they want in their way.

8   And so in this market, apps are like a measure -- the

9   number of apps is like a measure of quality, okay? It's an

10   objective number that tells you the quality of the App Store.

11   You can think of it as analogous to any quality variable like

12   the number of miles you get out of a battery in your electric

13   vehicle or something like that.

14   So let me start by discussing how economists think

15   about measuring harm from quality rather than price.

16   So for this I'm going to start with a simple price

17   case, so holding quality fixed. So I'm assuming that everyone

18   is familiar with this, so I'll go a little quickly, but here I

19   have a graph. Price is on the Y axis. That's the price of a

20   transaction. On the X axis is the quantity of transactions.

21   And here we have the demand curve. Now it's looking at the

22   demand curve describing the willingness to pay of consumers for

23   transactions. And we can imagine a competitive price leading

24   to a competitive quantity and a monopoly price leading to a

25   monopoly quantity.

1   Consumer surplus is measured by that triangle above

2   price. And so as the price increases and the quantity

3   decreases, we're going to have reduced consumer surplus. And

4   we can measure loss with the blue space there from monopoly

5   pricing.

6   So now let's think about quality. So we have some of

7   quality variable. Naturally the demand curve is defined to

8   hold everything constant, including quality.

9   How should we think about a monopolist that both

10   raises price and reduces quality? We're going to draw two

11   demand curves, one at the high quality --

12   **THE COURT:** Well, when you say "quality" put some

13   metrics on it. What are you talking about?

14   **DR. RYSMAN:** Here I'm thinking of the number of apps

15   in the app store.

16   **THE COURT:** Just number of apps?

17   **DR. RYSMAN:** Yeah. But it could be any quality

18   variable that we might --

19   **THE COURT:** All right.

20   **DR. RYSMAN:** So this is supposed to be general.

21   But here I've drawn now the demand at the competitive

22   variety, the competitive variety here captured by the number of

23   apps. Okay?

24   So we'll add the competitive price and the competitive

25   quantity and surplus is the triangle, the big triangle there.

1   And now I'm going to let the monopolist raise price

2   and reduce quality or this number of apps on the market and the

3   demand curve is going to shift in and now consumer surplus is

4   reduced to the little triangle above the monopoly price.

5   We can capture the loss of surplus and divide it up

6   into two parts. The blue part is the part we had before, the

7   loss in price. And the grayer part is the loss due to the

8   reduction in variety or the reduction in quality. Okay?

9   So the question for this case for me is, how big are

10   these two elements -- right? -- how big are these two elements

11   and how should we measure them? Importantly --

12   **THE COURT:** You mean, in other words, you can quantify

13   both the gray and the blue box?

14   **DR. RYSMAN:** Exactly.

15   **THE COURT:** All right. Go ahead.

16   **DR. RYSMAN:** So, importantly, Google sets the

17   commission rate. That's the tool they have, and that affects

18   both the price that gets set to consumers and variety, the

19   number of products on the market. And that leads to what I was

20   referring to -- what I was alluding to early, what I call here

21   the damages seesaw. Okay?

22   So when the pass-through rate is very high, there's

23   very high direct price effects. So Google raises the

24   commission rate, it gets passed through, there's high direct

25   price effect.

1   **THE COURT:** I just don't -- this is what I didn't

2   quite get. Okay. They charge a 30 percent fee. When you use

3   the Play Store to get to your customers, we take a third,

4   basically. Why is that reducing the incentive for variety? I

5   just -- I mean, that's what you have to do, you know that if

6   you want to be in the market, it's sort of built in. You just;

7   you do your thing anyway. Why does it reduce variety?

8   **DR. RYSMAN:** So there's a -- I posit a but-for

9   commission rate of 15 percent.

10   **THE COURT:** Okay.

11   **DR. RYSMAN:** So there's, let's call it, a competitive

12   rate of 15 percent, a monopoly rate of 30 percent. At that

13   higher rate the developers are less profitable and less of them

14   can be successful in the market. That's going to reduce the

15   number of apps in the market in the actual world relative to

16   the but-for world, and that reduces variety.

17   **THE COURT:** But how do you get to that punchline?

18   **DR. RYSMAN:** Okay. Great. It's coming. So I'll

19   just --

20   **THE COURT:** All right. Okay.

21   **DR. RYSMAN:** You've got to see this slide.

22   **THE COURT:** All right.

23   **DR. RYSMAN:** Wait until you see what happens.

24   So just to finish the slide, with a high pass-through

25   rate there's going to be high prices to consumers and a

1   relatively low effect on variety because the developers aren't

2   really -- they're maintaining their margin, they're not really

3   less profitable as that rate goes up. So they're still

4   profitable, the variety effects are low.

5   In the case when there's low pass-through -- right? --

6   now it maybe, let's say, zero pass-through. So Google raises

7   the rate from the but-for rate to the monopoly rate.

8   There's no change in price for consumers, so there's

9   no direct price effect, but now the developers are eating that.

10   There's more harm by this higher rate because the margin is

11   going down and less of them can be successful in the market,

12   and that's going to maximize the variety effect, all right?

13   And so as we discussed earlier, my goal -- my approach

14   is to not take a position on what is the pass-through rate or

15   what is the number of firms -- the number of apps that will be

16   on the market but, rather, just take the minimum across -- the

17   minimum damages across this range and push that -- put that out

18   as my proposed damages number.

19   Okay. So now to do the calculation I need a model

20   that's going to describe how this works, and so I need a model

21   of consumers valuing variety and firms making their entry

22   choices.

23   This part was easy. There's a classic paper, Dixit

24   and Stiglitz, from 1977. It's a textbook "Standard Model of

25   Monopolistic Competition."

1   Monopolistic competition is how economists describe

2   markets with many, many competitors but not quite perfect

3   competition. They have a little bit of pricing power, they're

4   a little bit differentiated from each other. It's a natural

5   way to think about the Play Store, and other economists have

6   written about the Play Store in that way too.

7   This Dixit and Stiglitz model has been plugged into

8   many, many different environments including in technologies

9   option cases.

10   Church and Gandal used it to describe hardware and

11   software.

12   Dubé -- Nair, Chintagunta, and Dubé use it in

13   empirical application to software for PDAs like Palm Pilots.

14   And it's been plugged into many, many other environments:

15   Growth, trade, macro. So it's a kind of really well-known

16   model that people use.

17   Okay. So here's how it works: It has three stages.

18   In the first stage there's many, many firms and they choose

19   whether to enter or not. If they enter, they have to pay a

20   fixed cost or a development cost, okay?

21   In the second stage they choose prices. You would

22   imagine as the number of firms entering the first stage gets

23   higher, prices will be lower because there's competition.

24   And then in this third stage, consumers make their

25   purchase decisions and the more firms that entered in the first

1   stage will lead to lower market shares for those firm's.

2   Software developers in the third stage leads them to be less

3   profitable.

4   So what happens in the first stage when the firms are

5   choosing whether to pay back costs, they don't want to enter

6   unless they're going to be able to make their revenue back in

7   stages 2 and 3. And so firms keep entering until profits are

8   driven down to zero.

9   Any more firms come in, they would make a negative

10   profit, so no more will come in. But if any fewer come in,

11   then there will be fewer profits on the table, more firms would

12   enter and we get a prediction on the number of firms in the

13   market. It's called a "free entry condition" or a "zero profit

14   condition," and it's incredibly common in economics to use

15   conditions like this.

16   What's the prediction of the model? If demand goes

17   down for some reason or the market becomes less profitable,

18   perhaps because the commission rate goes up, then there will be

19   less firms choosing to enter in the first period and we'll have

20   that reduced number of firms or reduced variety on the App

21   Store.

22   **THE COURT:** Let me ask you this, though --

23   **DR. RYSMAN:** Yeah.

24   **THE COURT:** -- so I tend to think of apps, you know,

25   originally but I agree with the idea they're creative works.

1   So there's the killer app -- right? -- there's the app that

2   just is super brilliant that some one individual or two

3   individuals have come up with and it rules the field.

4   Everybody wants it. It's a hundred times better than any

5   competitor.

6   How does this model -- I mean, I think that dynamic is

7   in the Play Store. How does this model deal with that?

8   **DR. RYSMAN:** Sure. Let me talk about that.

9   So I make an important assumption that the firms are

10   identical, all the entrants are identical in terms of their

11   quality and cost, and that leads to --

12   **THE COURT:** That's the symmetry assumption, right?

13   **DR. RYSMAN:** That's the symmetry assumption.

14   That leads them to have identical price and

15   quantities. Okay?

16   And then I make another assumption that we've been

17   talking about already that as we go from the monopoly rate to

18   the competitive rate, more firms are entering the market and

19   they have the same quality and cost. So the quality and cost

20   stays the same throughout. The quality and costs in my model

21   are targeted to get the average price and the average quantity

22   correct, so they're based on actual data from the Google Play

23   Store about prices and quantities.

24   This same assumption has been used in a number of

25   environments. As I think I mentioned the Nair, Chintagunta,

1   and Dubé --

2   (Reporter seeks clarification)

3   **DR. RYSMAN:** Chintagunta -- I'm sorry. Nair,

4   Chintagunta and Dubé.

5   **THE COURT:** We'll spell these later. Go ahead.

6   **DR. RYSMAN:** Okay. I can spell them, if you'd like.

7   And so -- and then there's this, you know, no, this no

8   predictability, this kind of predictability result that all of

9   the firms are identical.

10   And what I would stress is that I show in the

11   technical appendix that the average is the right thing to focus

12   on, that is, even if there's tremendous heterogeneity in

13   quality and cost, which will lead to tremendous heterogeneity

14   in prices and quantities like what you're describing, still my

15   model gets exactly the right welfare number or the right

16   damages number.

17   **THE COURT:** And why is it --

18   **DR. RYSMAN:** All of that averages out.

19   **THE COURT:** Why is it -- it just averages out, is

20   that --

21   **DR. RYSMAN:** Yeah.

22   **THE COURT:** It's literally that simple, it just

23   averages out?

24   **DR. RYSMAN:** Yes.

25   **THE COURT:** Okay. All right. Go ahead.

1   **DR. RYSMAN:** But I have a technical appendix making

2   that point, so it's fine to focus on the average.

3   So I'll just stress one or two to more points on the

4   slide.

5   Really predictable is this value for variety that

6   consumers have. Where does it come from? How do economists

7   think about measuring this value for variety? It follows

8   naturally from the price elasticity, right?

9   So to an economist, price elasticity is closely

10   related to the value of variety. You can think -- you know,

11   let's think of two products, Pepsi and Coke. The price for

12   Pepsi goes down. We can ask how many people switch over from

13   Coke?

14   If almost everybody switches over from Coke, then the

15   products are really close substitutes, the price of elasticity

16   is high and the value to variety of having those two products

17   is low.

18   Similarly, if relatively few people switch over from

19   one soda to the other, the price of elasticity is low, the

20   value to variety is higher, people really see them as

21   differentiated products. So it's really natural and economic.

22   Price elasticity provides a measure of the value of

23   variety that's naturally calibrated into dollar terms --

24   okay? -- so this comes straight from economics.

25   The actual value I use comes from a published paper,

1   Ghose and Han, that studies the Play Store, measures

2   elasticity.

3   And then I back it up with extensive regression

4   analysis based on the Google data that I have that uses

5   millions of observations based on billions of transactions, has

6   a fixed effects for every app and every time period and every

7   purchase type. In my regression results, I find that the Ghose

8   and Han result is actually quite conservative. I find a lower

9   elasticity. So this higher elasticity that Ghose and Han have

10   mean the value for variety is going to be lower than what it

11   would have been. So I use their result as something

12   conservative, and Google provides no evidence that the

13   elasticity is higher. They don't make that argument.

14   Okay. I'm going to show an equation so you can -- I

15   hope this is okay, but I -- I think it makes transparent --

16   **THE COURT:** That's fine. Yeah, go ahead.

17   **DR. RYSMAN:** -- what we're doing.

18   Okay. Good.

19   So now we're imagining period three. The app

20   developers have made their choice over whether to enter or not.

21   They've picked their price. Consumers have optimally allocated

22   their budget across all of the apps. Here's the utility that

23   they get.

24   So V is the utility that they get. It's a function of

25   two elements, price and N. This N is the number of apps on the

1   market. So that's kind of our measure of variety or measure of

2   quality in the market.

3   And if you can remember those demand curves that

4   shifted down -- sloped down in price and shifted out in N, this

5   is exactly what that is.

6   So what are the elements of the utility function?

7   There's Y, the net consumer spending. So if a consumer spends

8      $10 dollars on the Play Store, that Y will be 10. I hold it

9   fixed to be conservative.

10   I don't allow people to, let's say, now there's more

11   variety they want to spend more. I just restrict that to be

12   conservative. It gets grossed up by that TB term, that's the

13   discount. Google offers discounts through Play Points --

14   typically less than 1 percent -- so that grosses up their total

15   spending. It then has these two elements -- this is the kind

16   of interesting part -- the N and the P. P is price, N is

17   denominator. Higher price means lower value. N is variety.

18   That's entering with this row minus one. Row is where the

19   elasticity comes in. Row is that function of the elasticity.

20   And the higher is the elasticity, like when I use the Ghose and

21   Han result, the lower is the benefits to variety.

22   Importantly, row is less than 2, row minus 1 is less

23   than 1, function is concave. What does that mean? It means

24   that the thousandth app provides less value to consumers than

25   the hundredth app. The ten thousandth app provides less value,

1   the hundred thousandth app provides even less value. So it

2   gets this concave -- this kind of decreasing return to variety

3   that I think is very intuitive.

4   So this N and P are determined by competition in the

5   market. That's the Dixit and Stiglitz model. N and P are

6   going to be determined by cost, by the level of competition.

7   So I'm going to plug in for those. I can solve for those in

8   the model and I get a somewhat more complicated equation that I

9   personally still find very elegant, but I'll just go through

10   this one more quickly and say delta Y is my --

11   **THE COURT:** Just do this one at a high level. I don't

12   need --

13   **DR. RYSMAN:** Yeah. I don't want to go into this one

14   too deeply but I'll just say delta Y is the damages, Y is

15   spending -- that's how much consumers spend -- and then there's

16   a multiplier times spending.

17   So the damages that I compute are always linked to how

18   much a consumer uses. The App Store is always built on

19   transactions that always took place on the App Store.

20   And then the other elements are just stuff you would

21   expect to be there anyway, the Google's actual commission rate

22   and discount rate, Google's but-for commission rate and

23   discount rate. And there you can see the two prices that

24   represents the pass-through rate that I'm assuming is present

25   here. So I can kind of vary the pass-through rate with those

1   Ps and get to the different results that I describe and, you

2   know, the result of this model is exactly that damages seesaw

3   that we saw. High pass-through rate leads to high prices for

4   consumers but relatively more variety. Low pass-through rate

5   leads to very low direct price effects, relatively high --

6   more -- high effect on variety, bigger decreases. The apps now

7   are absorbing this big cost than having to not enter the

8   market.

9   **THE COURT:** So the delta Y is the dollar value of the

10   variety effect?

11   **DR. RYSMAN:** Delta Y is the total value that includes

12   both the direct price effect --

13   **THE COURT:** Okay.

14   **DR. RYSMAN:** -- and the variety effect.

15   If I assume that P1 is equal to P2, that's like a no

16   pass-through result, then delta Y would be purely a variety

17   effect.

18   **THE COURT:** So if you assume a zero pass-through rate,

19   then the delta Y is just variety?

20   **DR. RYSMAN:** That's exactly right.

21   **THE COURT:** Hmm. Okay.

22   **DR. RYSMAN:** And just for my last slides, I brought

23   some -- oh, cost is there too, excuse me, so . . .

24   And just for my last --

25   **THE COURT:** I'll just ask, if I may --

1   **DR. RYSMAN:** Please.

2   **THE COURT:** -- putting a dollar value on variety seems

3   slightly exotic to me, not living in your world, but is this a

4   standard? I know you're rooting it in Stiglitz and other

5   economic literature, but so with the assumption of the

6   pass-through rate of zero yielding a pure dollar value for the

7   variety effect, is that something you think is just right out

8   of economic literature that no reasonable economist would take

9   issue with?

10   **DR. RYSMAN:** Yes. Many economists have done this. We

11   already cited this Janßen and Waldfogel paper that has done it,

12   and I can name many more, if you'd like.

13   **THE COURT:** And just at a high level or whatever level

14   you think is appropriate, I should say, why does fit the tech

15   market? Why does this fit Play Store?

16   **DR. RYSMAN:** The model is explicitly accounting for

17   the two-sidedness or the platform nature of the market.

18   On one side is the app developers who are making their

19   entry and pricing choices. On the other side are the

20   consumers. In the middle is Google setting this commission

21   rate. I think it's a great model for thinking about tech

22   markets, and I'm not the first one to do so. As I mentioned, a

23   number of papers have used models like this to study --

24   **THE COURT:** So is another way of putting a dollar

25   value on variety effect, would another way of saying that would

1   be you're putting a dollar value on the extent to which you

2   believe Google has impeded innovation in the app market?

3   **DR. RYSMAN:** Yes. If we think of entry of new apps as

4   a form of innovation, then for sure.

5   **THE COURT:** Okay.

6   I have your report, Dr. Leonard. I read it. I

7   understand. But just for the sake of completeness, I know you

8   disagree with a lot of what Dr. Rysman has done, but just as

9   succinctly as you can -- and we're going to end this probably

10 soon -- why is that junk science? It sounded perfectly

11 reasonable. I know you don't like it for a variety of reasons,

12 and some of them are qualitative, some are quantitative, but

13 it's well grounded in the literature. Dr. Rysman certainly is

14 a credible economist. The inputs and the outputs are

15 relatively straightforward and understandable, they're all

16 based on the data in the case, so what's the problem?

17   **DR. LEONARD:** Well, I think you put your finger on it,

18 but like what's the connection to this actual marketplace we're

19 looking at?

20   The symmetry assumption actually hasn't been made by

21 other papers that have studied the app market. They've --

22 they, instead, have assumed that apps have different prices,

23 sales, they address the blockbuster issue and so on.

24   So I just -- you know, that -- that's really the key

25 of to the two, the blockbuster issue and, again, the symmetry

1   assumption is the exact opposite of that. Everything is

2   identical, everything's indistinguishable from each other.

3   And the important part is, and this is why it gets

4   simplified -- right? -- is that Dr. Rysman's model assumes that

5   the new apps that would be coming to the market are

6   indistinguishable from the ones that are already there. So

7   that makes it easy to evaluate those because you just say, oh,

8   they're just the same as the ones we have.

9   But I think, again, a moments thinking about this

10   would lead you to question that assumption -- right? -- because

11   app developers are smart. People who fund them are smart.

12   They're going to have -- the apps that are on the market are

13   going to be the ones that were the most profitable, okay? And

14   so the ones that were never introduced are going to be not that

15   great apps.

16   And so, yeah, maybe some of them would come in, in the

17   but-for world, but they're not going to be as good as the ones

18   that are already there.

19   Now, Dr. Rysman's response to that would be complete

20   unpredictability because that is assuming that nobody knows how

21   well an app is going to do and that, therefore, again, they're

22   just totally indistinguishable, the ones that are on the

23   market, the ones that weren't.

24   You know, we're talking about 300 -- over 300,000

25   additional apps in the but-for world. That's a 72 percent

1   increase in the number of apps according to Dr. Rysman's

2   calculations.

3   I mean, to think that there's 300,000 apps out there

4   that are just as good as the apps on the market, where's there

5   going to be the next HBO? Where's there going to be the next

6   Call of Duty? Where are those going to come from? It's

7   just --

8   **THE COURT:** My kids are all in their 20s, and I

9   guarantee everybody in that age group is working on an app,

10   okay?

11   **DR. LEONARD:** Well, they are, but most of them are

12   going to be the ones --

13   **THE COURT:** Whether it's going to be Zoom or whether

14   it's going to be an app that five people download, who knows,

15   but it doesn't sound improbable to me that there are 3 million

16   potential new apps that maybe people didn't want to get into

17   the market for because of the way the Play Store was

18   structured.

19   **DR. LEONARD:** Well, but I don't think those could

20   possibly be as good as the ones we already have. I mean, think

21   again about HBO --

22   **THE COURT:** You don't know that.

23   **DR. LEONARD:** -- creates its own content. Where is

24   something like that going to come from? They're just going to

25   come from -- some new entity is going to spring up and suddenly

1   create their own Sopranos and then --

2   **THE COURT:** It's in well spring of human ingenuity,

3   just like every other app came from. I mean, and there's no

4   monopoly on the prior generation.

5   **DR. LEONARD:** There is no monopoly.

6   **THE COURT:** They weren't smarter, better or faster

7   than the next generation.

8   **DR. LEONARD:** Right, but there's a selection issue,

9   right? The good things tend to have been done. Not all of

10   them, of course, but a lot of them.

11   The things that weren't done weren't done because they

12   weren't as good as the things that were done. I mean, that's a

13   basic selection issue that goes on constantly.

14   **THE COURT:** I'm not hearing, though, why a jury should

15   be barred from hearing Dr. Rysman's presentation. That's the

16   question before me. I just --

17   **DR. LEONARD:** Yeah, I understand.

18   Well, I think it's a bridge too far to say that the

19   300,000 apps that would come in would be essentially identical

20   to ones that exist -- the 400,000 or so that exist in the

21   actual world. That's a pretty far bridge.

22   **THE COURT:** I want to cover just a couple. We're

23   running out of time. I want to finish by noon. I'm going to

24   just jump around a little bit. I have a couple questions.

25   Dr. Singer, AT&T from the 1980s. I am having trouble

1   seeing how that works here.

2   **DR. SINGER:** Yeah.

3   So to give you some context, this is an input that

4   goes into the Rochet-Tirole model, and I think one of the only

5   inputs that they're really debating. They're not really

6   debating whether the Rochet-Tirole model -- a two-sided market

7   model authored by one of the Nobel Prize winners in

8   economics -- is applicable. We're fighting over an input.

9   Just to put this in context, when I went into the

10   economics literature looking for a monopolist in a network

11   industry that lost its monopoly by virtue of losing a tie

12   because of an antitrust intervention, as you know, MFJ in the

13   '80s, I found that to be the most compelling.

14   And what the literature shows is that when AT&T could

15   no longer force customers to take long distance and local as a

16   bundle, it immediately lost or very quickly lost 40 percent of

17   its former hundred percent domination in the long distance

18   market. So, for me, that was the best I could find, but I

19   didn't stop there. I went and looked in other network

20   industries where someone previously, like Netflix, dominated a

21   network industry with all the advantages of an incumbent and

22   studied what happened to their shares. And every one that I

23   found was a larger loss than AT&T's. Netflix's loss was larger

24   than AT&T's. So I felt that the AT&T assumption was

25   conservative, right?

1   But I want to give you one last thing too, Your Honor.

2   The model, itself, is not all that sensitive to this

3   assumption, right?

4   So Dr. Leonard, fortunately, has given us the precise

5   sensitivity. He looked at what happened to my model holding

6   all things equal if all you did was take Google's but-for share

7   from 60 percent to 70 percent. That is, in this but-for world

8   where Google refrains from engaging in the challenged

9   conduct -- right? -- one of the behemoths come in, Amazon,

10   Facebook or mobile carriers, whoever was knocked out by the

11   restraints. If instead of falling to 60 percent they would

12   have only fallen to 70 percent, my Rochet-Tirole model for the

13   consumer discount predicts a discount of 8 percent as opposed

14   to 10 percent in my best estimates, right?

15   So, in other words -- I'll do this slow. A 10

16   percentage point differential on Google's but-for share results

17   in a 2 percentage point differential in the discount that the

18   model would predict, right?

19   My best prediction, based on that AT&T input, is that

20   Google, upon losing its monopoly in app distribution on Android

21   phones, would be forced to raise the consumer discount from its

22   paltry 1 percent that it offers today on the order -- to

23   something on the order of 10 percent, okay?

24   But if you don't like the AT&T input, you think it's

25   too aggressive and you think that they would have only instead

1   lost 30 percentage points -- and he's already solved it for us.

2   I mean, I did it, too, but the solution is an 8 percent

3   subsidy, consumer discount subsidy as opposed to the 1 percent

4   that they're offering today.

5   **THE COURT:** What about Amazon Coin?

6   **DR. SINGER:** Oh, can we talk about that one?

7   Yeah. So the argument here on the Amazon -- right? --

8   I've got two models which I think bracket the range of

9   possibilities.

10   Do you want to put up -- I've got this slide. It's

11   slide 1 for the opening.

12   And what I have done is, I have -- you see this one,

13   Your Honor?

14   For today's debate we're going down the left side of

15   this tree. Do you have that in front of you by chance?

16   **THE COURT:** I do.

17   **DR. SINGER:** Yeah.

18   And so the Amazon discount model is one of two

19   different models that I used to estimate damages, when we

20   presume that competition would have broken out along the

21   consumer discount dimension, right?

22   The Amazon discount model presumes that Google would

23   have matched Amazon's discount in the but-for world dollar for

24   dollar, in terms of the magnitude of the discount. So, again,

25   Google's actual discount in the real world was around 1

1   percent, very paltry. They didn't have to. There was no

2   competition, right?

3   Amazon tried and failed -- in part because of the

4   restraints -- to make a run for it in app distribution on the

5   same exact phones. These are third-party devices. And I

6   calculated what the subsidy was there -- okay? -- and I found

7   that it was 19 percent of the revenues.

8   So what was happening, this is how we get to 19

9   percent -- Amazon took in about 29 percent from its take right

10   off the top, but then it flushed back out -- right? -- 19

11   percent of those revenues back to consumers in the form of

12   coins which could then be used for discounts -- right? -- such

13   that consumers on these third-party devices who downloaded from

14   the Amazon App Store were getting in their pockets -- right? --

15   a 19 percent discount off of everything they purchased.

16   And in the Amazon model, benchmark model, I presumed

17   that Google in a but-for world -- right? -- without the

18   restraints where they lost that lock on the phone -- someone

19   gets in, someone breaks through -- that Google would be forced

20   to match it dollar for dollar.

21   The primary attack on that model -- oh. And if you

22   think that's too aggressive, I've got the Rochet-Tirole model,

23   which says because of their incumbency advantage, they don't go

24   fully to the 19 percent subsidy, they stop at 10 percent.

25   So I think I've got a reasonable range of damages

1   between a 10 percent but-for subsidy discount and the 19

2   percent.

3   Their best attack, Your Honor, I mean, they've

4   launched --

5   **THE COURT:** I'll stop you, Doctor.

6   **DR. SINGER:** Okay.

7   **THE COURT:** What I hear you saying both here and in

8   your report is Amazon Coin works because it's the Android app

9   market, it's the only benchmark you can find of any heft

10 outside of Google --

11   **DR. SINGER:** Same phones -- same exact phones, same

12 business model -- right? -- actual real world data of 19

13 percent.

14   On the coins, they act as if the coins are a big

15 impediment to participation in the program, but my 19 percent

16 is based on what was actually used by Amazon's customers.

17   So whatever blockades or barricades that Amazon was

18 throwing up -- which they weren't -- to get into this program,

19 my 19 percent is the actual subsidy that they got back.

20   So whatever hula hoops Amazon made the customers jump

21 through, that's already taken into consideration.

22   I think, Your Honor, when you're an entrant or you're

23 in a competitive market, you don't put hula hoops up. You want

24 people to use the program. In fact, 90 percent of the

25 expenditure in the app store, Amazon's App Store, was through

1   the use of coins, right?

2   All you had to do was buy $82 worth of coins at one

3   time and you immediately got to that 18 percent level on their

4   step function, right?

5   Now, if you redeemed at smaller increments, you got

6   something smaller, but all you had to do was spend $82 in the

7   coin store in order to get the coins and you would get an 18

8   percent discount, which is almost equal to the 19 percent they

9   paid out in the aggregate to all their users.

10   So I find this argument -- you know, that the argument

11   basically comes down to, well, Amazon imposed impediments and

12   so Google would also impose impediments.

13   And I say no, no, no. If Amazon attacks you -- I

14   mean, this is Amazon, right? This isn't like a mom-and-pop

15   attacker. This is Amazon, right?

16   If Amazon attacks you and you can't fight them off

17   with anticompetitive restraints and you have to fight them,

18   instead, on the merits, it's reasonable to think that you're

19   going to increase your subsidy to the level of Amazon and

20   you're going to make enrollment easy.

21   Why would -- if people found out that my app store was

22   a pain -- right? -- to enroll but Amazon's was easy, no one

23   would go to mine. Everyone would just go to Amazon's and get

24   19 percent off at discount.

25   So I just -- respectfully, I can't -- this criticism

1   that Google would have made it difficult in the but-for world,

2   they can't afford to make it difficult under competition,

3   right?

4   You've got to compete on the merits. And if your

5   attacker and it's Amazon is coming at you at 19 percent, it

6   would make sense that you also have to meet their 19 percent.

7   And at 19 percent it's such a generous --

8   **THE COURT:** Okay.

9   **DR. SINGER:** -- loyalty program, customers would

10   participate. Thanks.

11   **THE COURT:** Dr. Leonard you get to close comments.

12   Just AT&T, Amazon Coin. I have the report, but anything you

13   want to add on that?

14   **DR. LEONARD:** Sure. Okay. So just, yeah, quickly I

15   think if you can go to slide 64 I think what's really

16   interesting here or key question is, are the people who are

17   using Amazon Coins and getting these enormous discounts -- to

18   me buying $84 worth of coins sounds like a lot. I would be

19   surprised if your average person would do that. And, in fact,

20   what you see is that they don't do that, so I'm on slide 64.

21   **THE COURT:** I have it.

22   **DR. LEONARD:** Oh, it's redacted, I'm sorry, so I'll

23   talk in generalities.

24   **THE COURT:** Yeah.

25   **DR. LEONARD:** But what you see is, look, the people --

1   Dr. Singer relied entirely on third-party Android devices.

2   **THE COURT:** Why is this redacted?

3   **DR. LEONARD:** I think because it's Amazon

4   confidential.

5   **THE COURT:** Okay. Go ahead.

6   **DR. LEONARD:** But, look, the people who bought Fire

7   tablets and used them and the people who use Fire TV, there's

8   absolutely nothing stopping them from buying Amazon Coins at

9    $80 a pop and getting those big discounts and using them, but

10   they don't. What you see is that a very small percentage of

11   those customers are using Amazon coins, even though they could.

12   **THE COURT:** So that 2.7 number is the number of Amazon

13   customers using the coins?

14   **DR. LEONARD:** That is the coins discount as a

15   percentage of total Fire tablet sales.

16   **THE COURT:** Where is the -- where is the count of

17   Amazon customers who use the coins?

18   **DR. LEONARD:** I don't think they had a count in the

19   documents. They didn't have a count of number of customers, so

20   you had to look at the -- by number of sales.

21   So you can see that on the right-hand side of this,

22   this is the product sales.

23   **THE COURT:** Yes.

24   **DR. LEONARD:** Fire tablets are, you know, 2.1 million,

25   I guess, or whatever it is.

1   And then the third-party Android devices --

2   **THE COURT:** Oh, I see.

3   **DR. LEONARD:** -- are much smaller. Yeah.

4   Now, again, Dr. Singer is basing it just on the

5   third-party Android devices, but the users of Fire tablets, why

6   aren't they a valid comparable for Amazon -- I mean for

7   Play Store users and they just didn't use coins in the same

8   proportion or get the same amount as of discounts and it's

9   totally their choice?

10   And in my view, the Fire tablet customer is going to

11   be a much better comparable for the Amazon -- for the

12   Play Store user than the third-party Android device users.

13   Now, why do I know that? Because Amazon, itself, said

14   so.

15   So if you go back to 63, Amazon noted that the people

16   who are using coins -- I've highlighted the part here. It

17   says -- I don't know if I'm allowed to say it but it --

18   basically a large amount of our coin usage is coming from a

19   small group of top spenders who turn out to be game players.

20   So what they're doing is they must -- this scares me a

21   little bit, but they must be spending an inordinate amount on

22   games, and for them it's worth going through the hoops.

23   **THE COURT:** So this is an Amazon -- this is an

24   internal Amazon document?

25   **DR. LEONARD:** It is, yes.

1   **DR. SINGER:** Your Honor, can I -- can I tell you why

2   it's a loaded --

3   **DR. LEONARD:** Therefore, what we're getting is you've

4   got a small group of users who are big game players, who are

5   supplying a lot. For them it may be worth going through the

6   hoops. You can't use Amazon Coins for things like

7   subscriptions. There are other restrictions as well. But

8   these -- this group that's getting those 19 percent discounts

9   is just not representative of your average Play user.

10   **THE COURT:** Okay.

11   **DR. SINGER:** Can I respond?

12   **THE COURT:** You don't have to add anything on AT&T if

13   you don't want to. I know it's --

14   **DR. LEONARD:** Well, I would like to quickly.

15   **THE COURT:** Very briefly because I want to wrap up.

16   **DR. LEONARD:** Yeah, I understand. I'll be very brief.

17   You know, AT&T, at best, was -- if you call it a

18   platform, at best was kind of a one-sided platform, and Google

19   is a two-sided platform as we've --

20   **THE COURT:** How about this: Let me just -- here's the

21   issue that I -- so Dr. Singer says he's giving you a break, so

22   to speak, because AT&T had the most modest level of reduction

23   post-reform. Netflix was bigger, other people were bigger.

24   AT&T was only a 40 percent drop, so these he's spotting you the

25   benefit of the lowest change.

1   **DR. LEONARD:** Well, I think what he's doing is, he's

2   picking the lowest out of the particular benchmarks that he

3   chose, but they're all invalid, so it's -- you know, one

4   invalid --

5   **THE COURT:** What's wrong with the Netflix?

6   **DR. LEONARD:** -- makes many invalids.

7   Huh?

8   **THE COURT:** What's wrong with the Netflix one? Why is

9   that not a good benchmark?

10   **DR. LEONARD:** I mean, Netflix is a provider of

11   content. It's not a provider of --

12   **THE COURT:** Well, so are apps. Apps are entertainment

13   and content.

14   **DR. LEONARD:** No. It's a two-sided platform. It's

15   providing apps -- matching up apps and users. It's a very

16   different thing.

17   Do we also -- what are the entry conditions like? I

18   mean, it essentially is using, I guess, Netflix --

19   **THE COURT:** So none of the -- let me just jump in, in

20   the interest of -- none of the exemplars or the comparables

21   that the Dr. Singer uses are two-sided platforms?

22   **DR. LEONARD:** I don't believe so, no. I mean, at

23   least not at the same kind of level of a platform where people

24   on two sides are coming together to exchange.

25   **THE COURT:** Okay. This is tremendously useful, I

1   enjoyed it quite a bit. Thank you.

2   Are there -- we have just a couple -- are there any

3   questions from anybody on the lawyers' side? Just come on up.

4   **MR. RAPHAEL:** Justin Raphael from Munger Tolles --

5   **THE COURT:** You've got to wait until you're here.

6   Yeah. you can put that back, yeah.

7   **MR. RAPHAEL:** Justin Raphael, Munger Tolles and Olson

8   for Google.

9   I guess I'd like to start --

10   **THE COURT:** What is it you want to -- let me -- let

11   me --

12   **MR. RAPHAEL:** I have a few questions for each expert,

13   Your Honor.

14   **THE COURT:** Let me screen it. What do you want to

15   ask?

16   **MR. RAPHAEL:** I'd like to follow up on Dr. Rysman's

17   assumptions. I'd like to ask him something about ad valorem

18   versus per unit and I'd like to ask Dr. Singer about -- one

19   question about the article he relies on and some questions

20   about a statement that he made during his remarks, which is

21   contradicted by some of his recent work.

22   **THE COURT:** All right. That one you can save for the

23   Daubert hearing, okay? You can argue that point at Daubert,

24   which is Thursday, I think, isn't it?

25   **MR. RAPHAEL:** The last point, Your Honor.

1   **THE COURT:** You can ask about the ad valorem and per

2   unit cost.

3   **MR. RAPHAEL:** All right. And just so I'm clear, Your

4   Honor, can I ask a little bit about the assumptions that

5   Dr. Rysman made?

6   **THE COURT:** Well, just start with the first one and

7   we'll see what happens.

8   **MR. RAPHAEL:** All right.

9   Dr. Rysman, at Boston University would you teach your

10   economics students that there's no difference in pass-through

11   between ad valorem tax and a per unit tax?

12   **DR. RYSMAN:** I've actually never taught about

13   pass-through in my classes, so it would be difficult for me to

14   answer that question.

15   **MR. RAPHAEL:** So you're going to offer opinions to

16   this jury based on pass-through assumptions in your model even

17   though you've never taught pass-through as an economist at

18   Boston University?

19   **DR. RYSMAN:** I haven't taught -- I would say I haven't

20   taught -- I have taught pass-through in some sense, but I have

21   not taught the difference between ad valorem and per unit.

22   **MR. RAPHAEL:** And never, in your years of training as

23   an economist or your teaching or your review of papers, have

24   you been familiar with the difference between those two things?

25   **DR. RYSMAN:** No. That's not true.

1   **THE COURT:** Let me ask you this, Dr. Rysman: For your

2   model does it matter whether you use the per unit or ad valorem

3   approach for the pass-through?

4   **DR. RYSMAN:** I actually don't know the answer to that.

5   I actually don't know the answer to that.

6   **THE COURT:** Because?

7   **DR. RYSMAN:** I only studied the ad valorem.

8   **THE COURT:** You what?

9   **DR. RYSMAN:** I only studied ad valorem. I studied the

10   commission that Google charges.

11   **THE COURT:** Oh. You used the ad valorem approach?

12   **DR. RYSMAN:** Yeah. I studied the commission that

13   Google charges.

14   **THE COURT:** Oh, I see. Okay. So you're not looking

15   at the per unit issue at all?

16   **DR. RYSMAN:** I don't use per unit in my approach.

17   **THE COURT:** I guess the short answer is he doesn't use

18   it. Well, okay.

19   What else do you have?

20   **MR. RAPHAEL:** Dr. Rysman, are you going to offer the

21   opinion to this jury that it is true that the apps that would

22   have entered in the but-for world are identical to the apps

23   that actually entered?

24   **DR. RYSMAN:** I'm relying on this empirical result that

25   finds that in this market, and I'm going to use that

1   assumption. I'm going to rely on this empirical result that we

2   talked about today in the paper about a Janßen, Waldfogel and

3   others that the apps that would have entered are of the same

4   quality as the ones that were before.

5   **MR. RAPHAEL:** But, Dr. Rysman, is it actually your

6   opinion that the apps in the actual world and the but-for world

7   have the same quality? Is that actually your opinion?

8   **DR. RYSMAN:** I'm not sure what the difference is

9   between what I just said and what you're asking.

10   The assumptions in my paper are clear. The motivation

11 for where they come from is clear. That's how I'm going to

12 present it to the jury.

13   **MR. RAPHAEL:** So your --

14   **THE COURT:** Okay. What else do you have? I'm

15 satisfied with that.

16   **MR. RAPHAEL:** Dr. Singer, your pass-through formula is

17 based on the Miller and Sheu article; is that right?

18   **DR. SINGER:** Yes. My pass-through formula of the one

19 minus share can be found in Miller, but I think it can be found

20 in other articles I cite as well. It's the standard logit

21 pass-through.

22   **MR. RAPHAEL:** If the Court reviewed the Miller and

23 Sheu article, would it find any reference to an ad valorem fee?

24   **DR. SINGER:** No, it wouldn't.

25   What Miller does instead is he talks about a

1   perturbation -- fancy word that economists use -- to the cost,

2   to the firm's cost. And he says, "For illustrative purposes

3   lets use a per unit tax to perturb the cost," but there's no

4   footnote below it, Your Honor, that says: and my results would

5   not pertain if this were ad valorem.

6   And, in fact, we cite another article in my filings --

7   I could take it to you -- that shows that the only thing that

8   matters even for an ad valorem tax is the change in the firm's

9   margin costs, the change in the firms -- and that's exactly

10   what my basket formula accounts for.

11   **THE COURT:** Look, we're not doing cross, we're doing

12   admissibility.

13   All right. Did you have something? Make your

14   appearances, please?

15   **MR. GLACKIN:** I do, Your Honor.

16   **MR. ARENSON:** Before you do, Your Honor, I am Greg

17   Arenson from Kaplan Fox for the consumer plaintiffs and we'll

18   make your life easier. We have no questions for Dr. --

19   **THE COURT:** Oh, okay. All right.

20   Anyone else? Ah, yes. Okay.

21   **MR. GLACKIN:** Good morning, Your Honor; Brendan

22   Glackin on behalf of State Attorneys General. I just have a

23   couple questions for Dr. Leonard.

24   **THE COURT:** Now, remember, he's just critiquing,

25   so . . .

1   **MR. GLACKIN:** He's just what?

2   **THE COURT:** He's just critiquing. He's not seeking to

3   get the model admitted.

4   **MR. GLACKIN:** Fair enough.

5   Well, hopefully this will be fast.

6   Good morning, Dr. Leonard. It's nice to see you

7   again.

8   Dr. Leonard, do you agree that there are tools that

9   economists can use to measure in dollars the benefits to

10   consumers of new product introduction?

11   **DR. LEONARD:** There are tools, but of course you have

12   to implement them correctly to get reliable results.

13   **MR. GLACKIN:** And, of course, you have undertaken that

14   exercise yourself of measuring the benefits in variety, surplus

15   and in reduced prices due to competition from the introduction

16   of new products, correct? You have done that, right?

17   **DR. LEONARD:** In a very different context, not a

18   prospective: Oh, here are 300,000 new apps, I'm going to value

19   those.

20   In fact, it was looking at a product that had already

21   been introduced in the marketplace. We could see how

22   consumers -- you know, what the demand for it was, how it

23   affected other products and calculate value that way.

24   That's a lot more reliable, obviously, because you're

25   basing it on the actual data, not speculation about what these

1 apps might look like.

2   **MR. GLACKIN:** And you're referring to your paper

3 published in the Journal of Industrial Economics in September

4 of 2002 about the introduction of new varieties of toilet

5 paper, correct?

6   **DR. LEONARD:** That's right. Well, one new variety.

7   **MR. GLACKIN:** And in that paper you measured the

8 variety surplus to consumers and the price effect of the

9 introduction of a new variety of toilet paper, correct?

10   **DR. LEONARD:** That's right. Again, looking at what

11 had actually happened.

12   **MR. GLACKIN:** No further questions. Thank you.

13   **THE COURT:** Okay. Great.

14   All right. So when come back on Thursday I just want

15 to make sure everybody here -- and if lawyers are not here, let

16 them know -- we'll talk a little bit about trial planning.

17 Okay? We've got some trial planning issues we have to discuss.

18 Okay?

19   Okay. Thanks very much.

20   **THE CLERK:** All rise. Court is adjourned.

21   (Concluded at 11:57 a.m.)

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1   C E R T I F I C A T E

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3   I certify that the foregoing is a true and correct

4   transcript of the of proceedings in the above-entitled matter.

5

6   _____   August 1, 2023
    JENNIFER L. COULTHARD, RMR, CRR   DATE
7   Official Court Reporter
    CA CSR#14457

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